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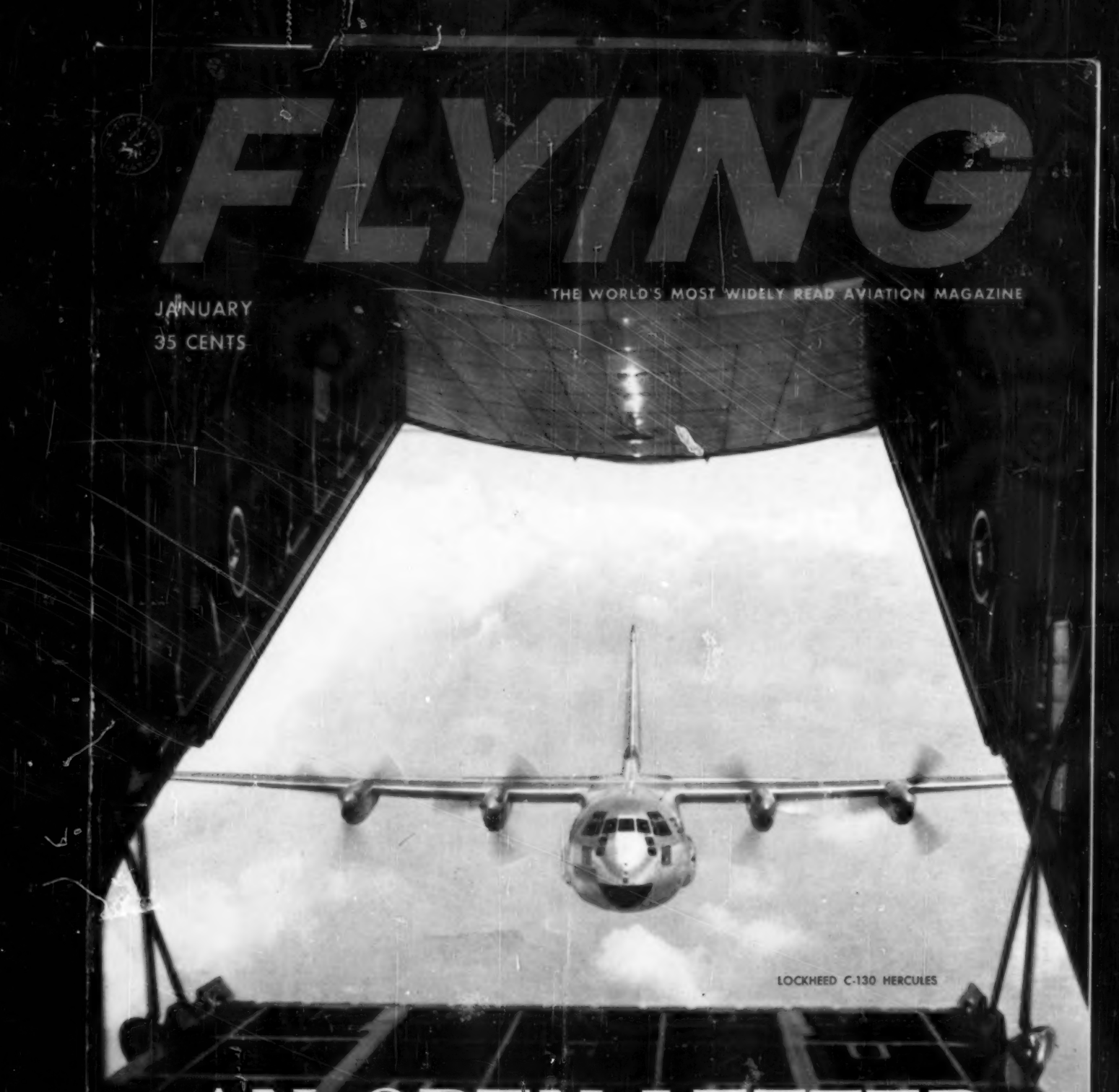


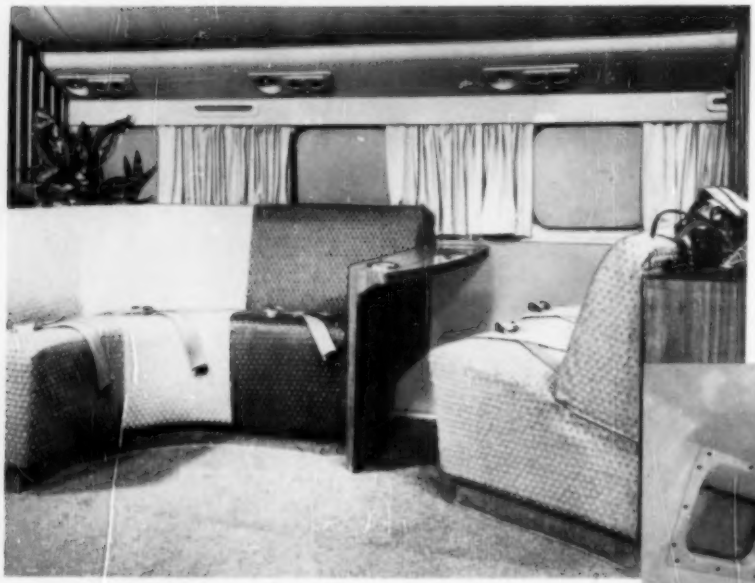
LOCKHEED C-130 HERCULES

AN OPEN LETTER TO THE CONGRESS

BY THE EDITOR

LOUNGES and GALLEYS

TO INDIVIDUAL AIRLINE REQUIREMENTS



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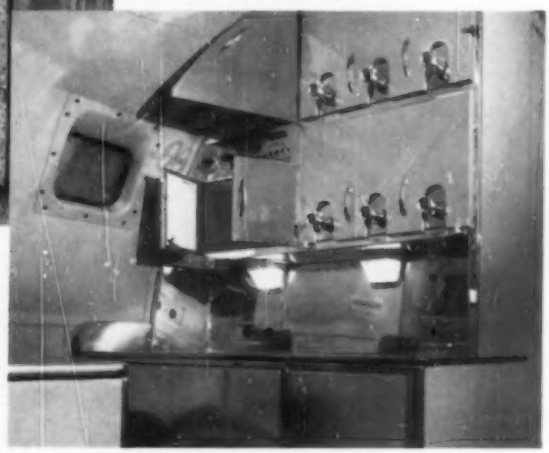

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JANUARY, 1958 VOLUME 62, NUMBER 1

THE COVER: USAF's first turboprop transport, the Lockheed C-130 Hercules, framed by the cargo door of another C-130. Read "The Labors of Hercules" on page 28.

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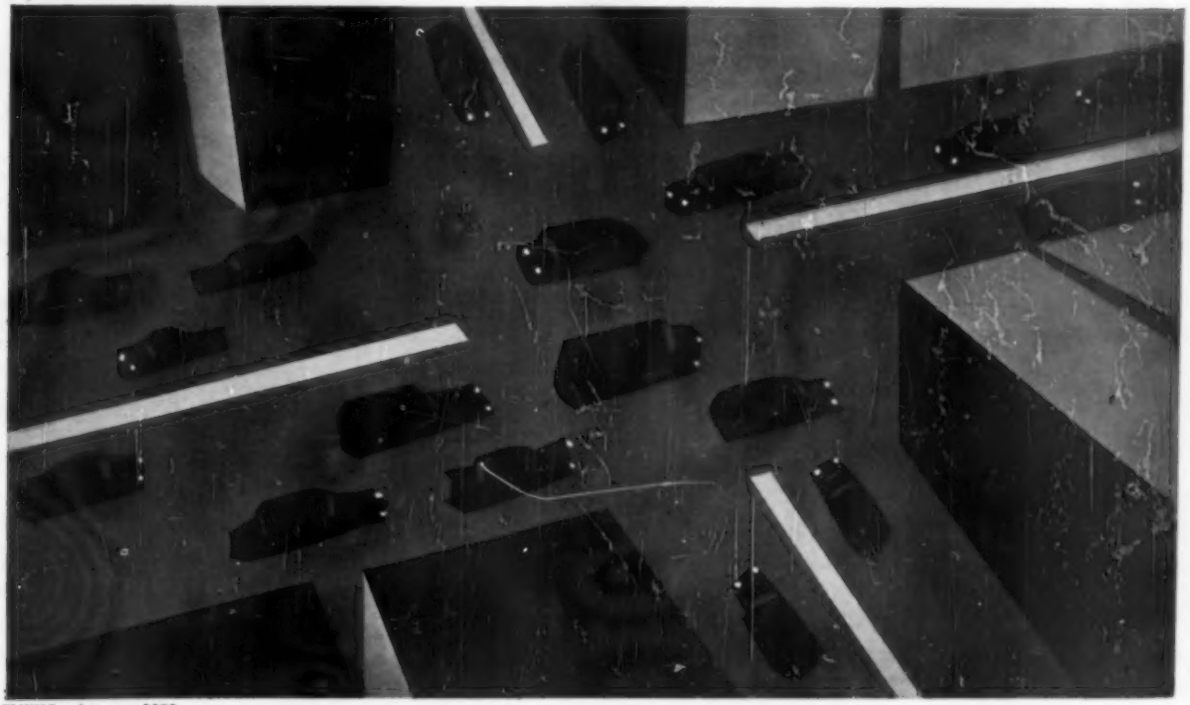

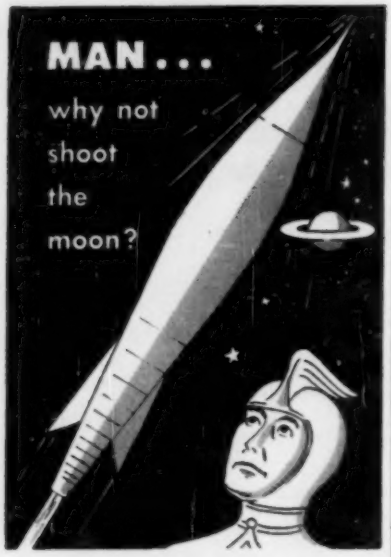

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MAILBOX

DENVER, USED PLANE MECCA

I have just finished reading the November issue of FLYING and in particular the article "Denver, Used Plane Mecca" . . .

Rather than the dismal picture Mr. Fairbanks has painted, the light two-place airplane (used) is strictly a seller's market and is snapped up immediately by local flyers and private pilots who have been waiting to secure something reasonable in price.

I think if you would interview any airport manager or flight operator in the country, they will tell you that the problem in the light two-place airplane reasonably priced ($800 to $2,000) field is not selling them, but trying to find one that is available. I have numerous inquiries every week for lower priced airplanes and when answering that I don't know of any at the moment, the reply is "That's what I'm told at every airport I visit."

SHELBY B. HAYBERG, MGR.
Skybirds, Municipal Airport
Carroll, Iowa

PARACHUTING FROM ALTITUDE

In answer to your "Mailbox" letter from John H. Hodgson, Bulawayo, Southern Rhodesia (October issue), requesting information on parachuting from altitude, the information desired is included in a report from the Flight Test Engineering Division, Human Factors Branch, dated 18 November 1954, and titled "Notes on High Altitude Bailout." The report should be available from the office of Maj. Durward E. Timmons, USAF, Ass't. Chief, Human Factors Branch, Edwards Air Force Base, Edwards, Calif., since Major Timmons authored same.

GENE VERBRUGGE
Lancaster, Calif.

• *Thanks for this information. We are sure Mr. Hodgson will welcome it as will other* FLYING *readers who are interested in this subject.—ED.*

ORCHID OF THE MONTH

I had a most pleasant experience recently which I would like to gratefully acknowledge.

I landed at the Perkiomen Valley Airport, Collegeville, Pa., where I was to have been met by some friends . . . after a 10- or 15-minute wait during which I tried to communicate with my friends by telephone, the operators of the airport offered the use of their jeep. Of course, I accepted gratefully, but to my amazement when I returned to the airport and offered to pay for this service, I was politely told there was no charge.

To Mr. and Mrs. William Platt, I vote the orchid of the month for their courtesy and, in my humble judgment, a substantial contribution to the field of aviation.

ALBERT RATHBLOTT
Counsellor at Law
Camden, N. J.

AUTOMOBILES TOO DANGEROUS

For the past five years I have been Safety Director for the Laredo AFB here in Texas. . . . About two and a half years ago I had a head-on collision in my automobile. Fortunately, there were no serious injuries. But this accident, and the fact that so many occur every day caused me to do something about it. I bought an airplane and, during the past two and a half years, have logged over 250 hours, have passed my commercial written test and hope to get my commercial ticket soon. I am 54 years old, enjoy

flying thoroughly and recommend it to any person who wants a safer, quicker and more enjoyable way to travel.

My son, aged 17 years last August, passed his Private pilot's test on his birthday, the 28th. He started taking lessons from a recognized instructor and made his first solo on his 16th birthday. . . . He is now working toward his commercial and also wants to get an instrument rating. His greatest ambition is to be an airline pilot.

This letter is written in the interest of aviation promotion, especially in the age group of my son (above) and those in my age group who may think they are too old to start something different.

HAROLD W. WOOD
Laredo, Tex.

PRAISE FOR WEST YELLOWSTONE

As an enthusiastic reader of FLYING magazine I would like to recommend the excellent airfield and services available for private pilots at West Yellowstone in Montana.

Briefly, the situation is this: Mr. Otis A. Kahus took over management of this

(Continued on page 8)

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MAILBOX

(Continued from page 6)

more or less municipally-owned airport over a year ago. He has provided excellent tie-downs which are necessary where high winds are frequent. Gasoline is available to all pilots at Kahus' cost. It is only necessary to fly over the town once and land at the field and this gentleman will meet you at the field and take you into town. If you wish to rent a car, he will make provision for it. He will also make hotel reservations for you either inside the Park, or outside.

The landing strip, a mile long and hard-surfaced, is naturally at high altitude and pilots should be warned to try to arrive before noon and to take off as early as possible in the morning after sunup. The strip is within three miles of the west entrance of the Park. Anyone coming to this area from the south could fly on the Omnirange to Pocatello, and the south leg of the range station at Twin Falls to Twin Falls, Idaho, and from there the north leg of the Twin Falls range station will take them right over the field at West Yellowstone.

I thought this field and its excellent facilities would be of interest to many of the pilots reading your magazine.

BEN R. BOICE, M.D.

Sondra, Calif.

• FLYING *is grateful to Dr. Boice for this information and very glad to pass it along. —ED.*

MOTHS IN NEW ZEALAND

In reply to letters in the "Mailbox" under the heading of "Whither the Moth": I learned to fly in a Gipsy Moth in 1935 and as recently as February last I saw one flying. There are many Tiger Moths flying in this country (at least 100) mostly in use by aerial applicator companies, but quite a number are in use by private owners and clubs. We have one in our own South Otago Aero Club and two of our members have their own Tiger Moths.

Best wishes to your magazine, which I look forward to receiving each month from my news agent (Miss Kearney-Balclutha).

L. G. BELL

Stirling, Otago
New Zealand

FLYING CLUBS

The Central Square Flyers, Inc., is an organization a little over two years old. During this time we have built our own airfield, hangar and clubroom. We have a 2,100-foot hard clay and sod runway and now have on order a new "Deluxe 95" Super Cub.

Because we have so enjoyed this sport of flying, at reasonable rates, we would like to make it available to other pilots.

Any one interested in joining "the flyingest club in the great Northeast" may contact us at the following address.

BERNARD CLAPP

Route #1
Pennelville, N. Y.

AIR CLUB DO RIO GRANDE DO SUL

The object of this letter is to extend to you my most sincere wishes for constant prosperity in the interest of world aviation, because I am a great admirer of your monthly publication FLYING, and because the reading of your so very much appreciated numbers causes me great pleasure.

I am a civil pilot, graduated from the Air-Club do Rio Grande do Sul, Brasil, and for this reason I would like to maintain correspondence with you, for I know something about aviation and like it very much. To give you an idea of how well our Air-Club is organized, the list of our 13 planes follows: two Fairchild PT-19's; two Piper PA-18's and two Piper Cub J-3's. Two Paulistinhas CAP-4's; one Piper PA-20; one Aeronca, one Taylorcraft, one Niess and one HL-6.

The Paulistinhas are products of the Brazilian industry. They are almost identical to your Piper Cubs, differing only in

that ours have an auxiliary tank placed over the cabin and they are heavier. The two PT-19's are used for training the instructors and the Paulistinhas and the J-3's for private pilots.

We have two hangars, a workshop, a shop for reconstruction of planes, and a complete maintenance service. We have a hall for social gatherings. For training of new pilots, we have three very able instructors.

I don't know whether your publication is only related to the aviation in your country; if so, this would invalidate my correspondence and make it lose interest for you. Your interest in our operation is the only object of my letter.

F. ODONE DIHL

Porto Alegre-RS-Brasil

• FLYING *is indeed not read only in the United States. It has a paid foreign circulation of 26,403 distributed in 81 countries and possessions of the globe, and our interests in aviation are as broad as the world itself.—ED.*

BIRDS SHUN RED

It has been my experience that birds avoid nesting in an airplane, the nose of which is painted bright red. Can anyone confirm or refute this observation?

HERMAN L. MELTZER

Clinton, Ill.

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Briefings . . .

FACING A 10,000-MILE flight from Osceola, Wis. to Buenos Aires, Danilo Frey (right) of Aviquipo Inc., Argentine export agency for Champion Aircraft, accepts the keys to his new Tri-Traveler

from James Boutwell, Champion distributor for southern USA. Stopping for demonstration flights en route, Frey's course entailed over-water hops, 20,000-foot mountain peaks and flight over wild jungle areas. His plane is a standard model except for auxiliary gas tanks.

MOST RECENT of Flight Safety Foundation's publications is "Ramp Service," a booklet full of useful tips for airport operators. Well illustrated, it is a companion piece to FSF's "Aircraft Fueling." It may be obtained for 50 cents per copy (cost of the printing), with discount allowed for quantity purchases. Address 468 Fourth Ave., New York 16, N. Y.

HONORED FOR 50 YEARS of service in the public relations field, 22 years of them as Public Relations Director of Eastern Air Lines, Beverly Griffiths, "the most beloved publicist," is tendered a banquet by 600 co-workers and presented with a testimonial scroll bearing the names of 77 outstanding men in the news

profession—all personal friends. At left, Boss Eddie Rickenbacker stands with "Bev" as Ralph McGill of the Atlanta Constitution presented the scroll on behalf of those who signed it.

IN AN ACTION of major significance, CAB, on December 1 last, assumed control of all air space above 24,000 feet, exclusive of prohibited and restricted areas, for the purpose of air traffic control. One of the principal changes in ATC in this new "continental control area" was effected by increasing minimum VFR visibility for flights to five miles and minimum clearances from clouds to 1,000 feet vertically and one mile horizontally. When experience and facilities permit, CAB anticipates lowering this airspace floor to 15,000 feet.

AT THE REQUEST of CAA the FCC has changed its rules to allow aircraft, once contact has been established, to identify themselves by using the last two characters only of their aircraft registration number, in place of the three heretofore required.

MEETING AT LOCK HAVEN, PA. for its annual sales gathering, October 23-25, Piper Aircraft welcomed over 300 representatives including distributors from Alaska, New Zealand, South Africa, Australia, the British Isles and Europe. Highlight of the program was the opportunity to fly the Comanche for the first time.

MOTOROLA's new "Weatherman" portable radio is this tiny six-transistor set which brings in aeronautical weather reports as well as standard broadcasts.

Furthermore the set can be used as a navigational aid. Two ferrite rod-antennas give the portable unusual power and sensitivity; four inexpensive penlite cells power it for over 200 hours. The price is around $80.

WILLIS PLAYER, associated with the Air Transport Association since 1954 as director of public relations, became a vice president of American Airlines September 1. Experienced in airline public relations as well as the newspaper field, Mr. Player, prior to joining ATA, served as vice president for public relations of Northwest Orient Airlines and, earlier, as Public Relations Director for Pan American.

PROFICIENCY TRAINING COURSES for the executive and corporate aircraft pilot have been initiated by United Air Lines. Identical to training given UAL pilots, the courses include radar instruction, meteorology, limited DC-6 and Convair 340 Link and simulator training and will be given at major UAL terminals. Inquiries for details should be addressed to UAL Flight Operations Div., Stapleton Airfield, Denver, Colo.

NAMED "Flying Farmer of the Year," 70 years young, Al Ward (left) is congratulated at the FFA's 11th annual meeting in Chicago by International Harvester Co. Board Chairman, John L. McCaffrey whose company, one of the hosts for the meeting, operates a fleet of

two DC-3's and three twin Beechcraft. Mr. Ward, a pilot since 1940, and charter member of FFA, owns a 15,000-acre cattle ranch 30 miles from Akron, Ohio, to which he commutes in his airplane. He flew a twin Apache with a number of passengers to the Chicago conclave.

REQUIREMENTS for the installation, performance and maintenance of non-Federal VHF Omni radio ranges (VOR) are stated in CAA Technical Standard Order N27 available from CAA, Distribution Section, Washington, D.C. and Regional offices. TSO-N27 was prepared in order to standardize the installation, operation and maintenance of private VOR facilities with those operated by CAA. A large percentage of these non-Federal VOR facilities are operated by State aviation organizations.

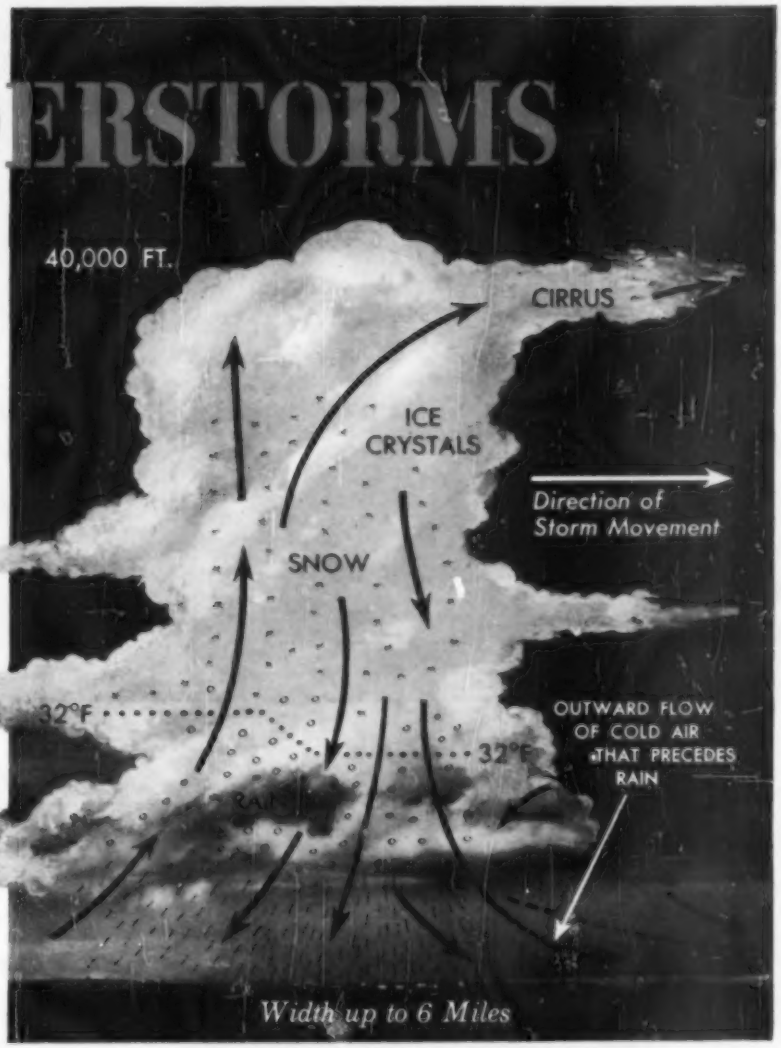
CONTRASTING THE NEW with the old, a quarter century of air progress is shown here. The new, the Boeing 707 jet; the old, the eight-passenger "Pilgrim" built by American Airplane & Engine Co. (now Fairchild) for American Airways (now American Airlines) in 1931. Replaced by American in 1937 and operated by Alaskan Airlines since 1939, the 100-

mph "Pilgrim" was recently sold to the Salmon River Flying Service in Idaho. Tex Johnson, Boeing test pilot; R. C. Gilbert of Alaska Air Lines and E. H. Raiguel, American Airlines, reminisce over the old "bird."

TWO MODERN JESSIE JAMESES finally brought the airplane into its own when they recently robbed the First State Bank of Ft. Meade, Fla., of $26,657, and escaped in a small plane. Two planes

(Continued on page 90)

THUNDERSTORMS



SINCE most flyers avoid thunderstorms either visually or with radar, the only time they usually have to be reckoned with is near airport during take-offs or landings. Diagram at right indicates hazardous features of a mature thunderstorm.

Notice the wedge of rain-cooled air that pushes along the ground ahead of the storm. It is this rush of air that creates the greatest hazard to planes maneuvering in the vicinity. Very sudden wind-shifts may destroy lift momentarily and sudden drop in temperature can adversely affect engine performance. Cold downdrafts precede and accompany heavy rain and are usually followed by updrafts in rear portion of storm.

Maximum turbulence occurs in region of heavy rain where downdraft is closest to updraft. It is encountered between 12,000 and 20,000 ft. Maximum hail occurs between 10,000 and 15,000 ft., sometimes in clear air just outside cloud.

If forced to fly through storm, take following precautions: Prepare engine, de-icing equipment and instruments for changing conditions. Avoid turns and other maneuvers after penetration. Avoid over-controlling, ride with the drafts. Slow down to safe speed, but don't lower flaps to accomplish this. Don't try to adjust throttle for every change in airspeed indicator which is affected by brief pressure changes and rain.

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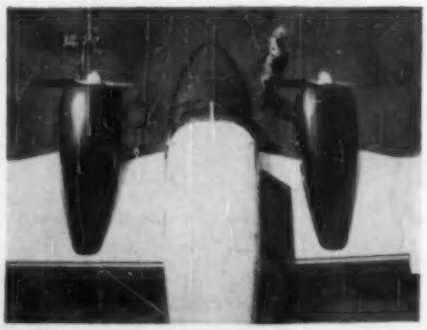
The Apache has the biggest, most comfortable cabin of any plane in its class. Standard seating arrangement includes four individually adjustable seats, deeply upholstered and styled to suit the most discriminating taste. Fifth seat (optional) can be quickly slipped onto tracks at rear of cabin.

GREAT NEW CABIN COMFORT AND BEAUTY

"Quiet, comfortable, beautiful"—these words describe the Apache's big, roomy interior. Each seat has a three-position reclining back and is adjustable fore and aft. New optional head rests provide truly relaxed travel. For the ultimate in comfort, two reclining airline-type chairs can be installed in rear.

DOUBLE SWEPT LEADING EDGE

with new wing root fillets provides improved air flow at low speeds for better control. Apache takes off quicker, lands shorter than any other twin.



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The beautiful new 1958 Apache cruises over 170 mph with a whopping 1,570-pound payload, enough weight allowance for five passengers and 108 gallons of fuel (72 gallons in main tanks, 36 in optional auxiliaries) for a range of more than 1,200 miles.

The most thoroughly proven light twin on the market, and by far the most popular, the new 1958 Apache with its increased payload and performance represents more than ever the best possible investment for round-the-clock, night and day transportation with twin-engine reliability. $35,990 standard, completely equipped less radio. See your Piper dealer or write for new brochure, Dept. 1-G.

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HANGAR FLYING

FACE TO FACE

IT WAS a beautiful day for flying and the call of the heavens was irresistible. Unfortunately, I am of the breed that flies only when the jealously guarded pennies accumulate into enough dollars to rent a Cub for a short hop. So, after a two months' sentence on the ground, I made a bee-line to the airport, collared one of the instructors and begged for a check ride. He finally gave in and off we went. Three sloppy landings later, he decided that this Dilbert was safe enough and let me go solo.

Just to satisfy my curiosity, I flew to the old practice area where I'd taken my private pilot's check and tried those simple maneuvers again. Sure enough, the old touch was still there and I felt pretty happy with myself when I returned to the field. I had been out of the pattern just ten minutes but I checked the direction of the other traffic anyway. None was readily visible. The wind was light and shifting. There was no wind-tee and the sock hung limp. I decided to come in the same way I took off, toward the north.

The pattern unfolded perfectly and I started my glide as I turned into the base leg. The glide was all right, though fast, and I hit the final approach just at the right spot, with my eyes constantly sweeping the field of vision, or so I thought. Fifty feet from the ground, I suddenly saw the bright yellow Cub heading toward me on his landing roll. Luckily the glide was fast and I had not started the flare-out. The throttle went to the wall and a hasty chandelle to the left took me up to 200 feet as I crossed the airport boundary 90 degrees to the runway. A new pattern, this time in the right direction, brought me in safely. I sheepishly told the instructor what had happened, expecting a good chewing-out. But all he said was: "You've got to keep looking consciously."

EMILE W. CLEDE, JR.
West Hyattsville, Md.

LINDBERGH'S PROPELLER

THE STANDARD-STEEL propeller used by Lindbergh on his transatlantic airplane, Spirit of St. Louis, was set to give the best cruising speed and fuel economy instead of maximum take off performance. Lindbergh's biggest worry was range; he was afraid that with propeller set at a flatter pitch for greater thrust and quicker take-off, the fuel consumption of his engine would be too high. As a barnstorming pilot, used to under-powered airplanes and small fields, he preferred to take the chance to "feel" the Spirit of St. Louis off the ground and be ready to cut the throttle the instant he felt that it would not get off. The two-position, controllable prop, which came out a couple of years later, would have

solved his problem by reducing the take-off run and improving fuel economy. As it was, with a pitch setting of 16.25 degrees, Lindbergh's engine delivered 190 of the 210 hp available and he just cleared the wires bordering Roosevelt Field, by some 20 feet.

FRANK J. DELEAR
Bridgeport, Conn.

RUNAWAY PLANE

DURING the month of February 1949, a pilot from Gray Army Airfield, Fort Lewis, Wash., was preparing to give an enlisted man a ride in an L-16 Aeronca Army aircraft. The enlisted man boarded the airplane and the pilot went around to the front to spin the prop. Apparently the throttle was open because when the engine started the L-16 moved rapidly forward. The enlisted man remained in the cockpit while the pilot attempted to stop the airplane by grabbing the wing struts. He failed to arrest its progress but succeeded in veering the plane off to the left. As it picked up speed the pilot was obliged to relinquish his hold on the struts and the aircraft became airborne, headed toward a vacant area between the hangars where Army Engineers had previously stacked some pontoons. The plane did not clear the floats and one of its wheels was knocked off as it passed over. In the meantime, the enlisted man either jumped or fell out, suffering serious injury.

The impact caused the plane to change its course 180 degrees and it headed across the field, climbing into the overcast. As it disappeared, all appropriate agencies in the area were notified.

The Air Force sent up a couple of jets to shoot it down if it wandered over the Puget Sound, but the L-16 flew towards the Cascade Mountains instead. A search was initiated, and reports, mostly false, began to come in. All efforts to locate the missing plane met with negative results. The following day, a rancher called in that an Army aircraft had landed on his pasture.

A check disclosed that it was the runaway L-16, which had come down in the pasture without damage. It crossed the mountains at a time when the turbulence was so severe that an Air Force B-25, in the same vicinity, was obliged to turn back. A sidelight on this incident is that the L-16 was repaired and later used in Korea.

LT. HOWARD L. PREMO
Fort Lewis, Wash.

WEATHER STOP

FOR A FEW bucks you have been ferrying this Flying Crate across the country. The sky is black, there's a slight drizzle, and you are holed up in a beanery on an unfamiliar airport waiting for the stuff to lift. You reach inside your flight jacket pocket for a butt and come up with an empty pack. There's a cigarette machine over by the wall and you fish for the change, but it's no use, the coin slot has a piece of folded cardboard stuffed in it. You order another cup of coffee, and, as you sip it, you have a sneaking suspicion that one of its ingredients is missing, the coffee maybe.

You are beginning to wonder if the weather will ever clear up when, from down the counter, your name is called: "Joe, you old son-of-a-gun, you are a sight for sore eyes." Then someone is pumping your hand while you wonder whether he is trying to put a touch on you. You look up, the face is familiar, yet somehow it does not quite ring the bell. But the guy greets you like a long lost Siamese-twin. "Remember me?" he gushes. "Hank so-and-so, . . . L.A. . . . had trouble with stalls and things." The bell finally rings. Sure, you remember Hank, soloed him a couple of years ago. Rode with him on his dual cross-country up to 'Frisco. He got his private license shortly afterward and then just drifted out of sight.

You remember Hank when he walked into the flight office one summer day and announced that he wanted to learn to fly. There were the usual questions, how much would it cost, where could he take his physical and when could he start?

You took him out for half an hour after explaining the workings of an airplane, let him feel the controls while showing him how the world should look from straight and level. He was a little tense, but you could tell from the way he drank it all in that the kid was going to like it.

After you sit behind a guy for eight hours, you get to know more about him than the size of his collar. There ought to be more Hanks around, they're the pulse beat of this business. They're the kind who never cease to be fascinated by the

(Continued on page 16)

Ever Tried Radar?

If you want a big thrill and at the same time want to learn something that may save your neck some day, go out and shoot a radar approach some time.

Most major terminal airports are now equipped with radar and, except during the busiest periods of airline departures and arrivals, the radar crews welcome a chance to do a little practicing too.

There are two types of approaches available: Plan Position Indicator (PPI), and Precision Approach Radar (PAR or GCA). PAR gives the controller your position and your altitude on final approach with respect to the desirable glide path. PPI is a surveillance radar and only gives the controller your position, with somewhat less accuracy than PAR (GCA), and without altitude information.

To practice a radar approach, get 15 or 20 miles away from the airport, call the tower or approach control and tell them you'd like a practice radar approach if they're not too busy.

If you're proficient on instruments, try it under the hood with a check pilot along.

They'll have you take a prescribed heading or do a couple of turns for position radar identification and once this has been established they'll give you a heading, with subsequent corrections to position you either on downwind or base leg.

With PPI they'll put you on a base leg about six miles out, get you headed toward the runway on final approach and then give you recommended rate of descent for your speed, and tell you when to start descending. As you pass each "milemarker" on the radar screen they tell you what altitude you should have at that point. With PAR they can actually "see" whether you're on the glide path, above or below it and correct you.

After you've tried a few radar approaches you gain a wonderful feeling of confidence in the system and know that if you get caught on top or in the stuff there's no need to hit the panic button, even if you aren't equipped for ILS.

It also gives you pause to think that some instrument proficiency is the smartest investment you can make. So jump in that Link or get an instrument hood so you can at least learn how to hold a prescribed course and make turns as directed. You can leave the navigation problems up to the boys on the ground.

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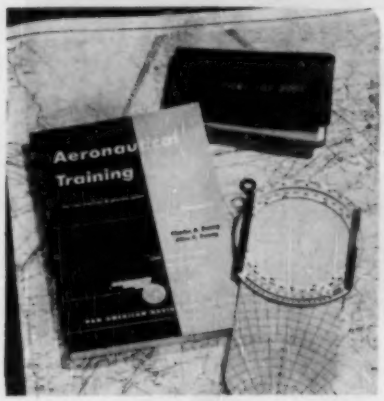

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Hangar Flying

(Continued from page 14)

ever-changing pattern that unfolds beneath their wings. They're the guys you catch edging toward a window when the sound of an engine drones somewhere overhead. You remember Hank all right. It was around his fifth or sixth hour wasn't it? When he said over a bottle of coke to you: "Do you think I am getting worse, Joe? Do you think I'll ever get it?" He was genuinely worried. But Hank was not getting worse, not by a long shot. You were just beginning to push him a little harder, calling his attention to the mistakes and making him take notice of corrections.

When Hank's eighth hour slipped by and he did not solo right on the dot, you sense there was a slight feeling of disappointment, even though he never mentioned it but just kept plugging along. Finally, after a landing, you had him taxi off the runway while you crawled out and told him that he was on his own. There was a smile on his face, but underneath, you could feel a bit of apprehension. This is the moment he was waiting for. A light breeze quartered across the runway but the air was smooth. You told him to shoot three landings unless you waved him in. He nodded as you closed the door and started off, lined up with the runway, opened the throttle and was off the ground almost before he realized it.

That first landing was a good one, the second one, not too bad either. Bounced a little on the third. Getting a little cocky now, thinks he has it made. He taxied back to where you were waiting and climbed out, almost forgetting to shut off the engine, excited as a three-year-old kid after his first pony ride.

Suddenly, you have become the greatest guy in the world, you have taught him to fly. No matter where you see Hank after this, he will fondly remember you as the "old master." Hank's giving you the low-down now on all that passed under the bridge since you saw him last. You are smoking one of his cork-tipped cigarettes and the coffee suddenly does not seem so bad anymore. You look out of the window again and somebody at the counter says: "Dog-gone it, if it does not look like it's clearing."

MAURICE DUDLEY

Canoga Park, Calif.

BEWARE OF GUSTLOCKS

WHEN I first got the gustlocks for my Piper Apache the question entered my mind: "What will happen if I inadvertently took off with them on?" My guess was that it would probably end up in a cracked-up plane and a defunct pilot. Not long ago my question was answered, much more graphically than I expected.

On that memorable day I came out to the airport, removed the gustlocks, as usual, and was about to climb aboard when an attendant ran out and said that I was wanted on the 'phone. While I was busy with the call, another attendant noticed the Apache sitting in the wind without gustlocks and, good man that he was, he put them on.

I returned to the plane, my mind still occupied with the conversation I just had, checked out the engines and proceeded to taxi to the end of the runway without having gone through the usual check-off procedure, revved up and took off. Over the end of the runway I realized, in a moment of panic, that the airplane was not climbing at its usual rate of speed. I knew then that the gustlocks were on. When the truth dawned upon me, I was "all shook up". Fortunately, the feeling did not last long and I came out of it thinking: "What-the-heck, I am flying. Things could be much worse."

First turning slightly to the right and then to the left, I found that there was enough aileron travel to accomplish flat turns. I tried to apply power to see if the ship would climb. I knew that going down was the least of my problems. By increasing or reducing power I could climb and descend with control.

My immediate objective was to get back to the runway in one piece. By making a careful 360-degree turn and holding the ship as level as possible, I circled around the field and brought the plane in at the end of the runway, gustlocks and all.

BILL THOMPSON as told to
FRANCES THOMPSON

Fargo, N. Dak.

SNOW CHOKED

WITH THE grand total of some ten hours of solo in my log book, I sat at the controls of an Aeronca, behind the DC-3 at my home field in Maine. I was "warming up" and so was my aircraft. The reason for my personal rise in temperature was the long wait for the airliner to take off. All I could see was the cloud of snow thrown at me by the prop wash while its engines were being run up. Swearing under my breath, I waited approximately two seconds after the DC-3 took off and bored right into the air behind it.

At 300 feet above the end of the runway I noticed that my rpm's were somewhat lower than my blood pressure. The Aeronca struggled along valiantly, trying to remain airborne at the nose-high altitude that I was forcing on it. When the rpm's dropped to 1,700, however, I forgot my mental feud with the airliner and took a greater interest in my own aircraft.

With luck, which favors the uninitiated, I mushed around the field and landed, with an engine that was barely doing better than idling when I turned on to the final approach. The boys at the operations shack were taking a great deal of interest in my trip around the field, wondering whether I was playing a game or practicing slow flight from take-off.

After regaining enough composure to talk, I inquired discreetly what was wrong with the aircraft. The consensus was that anyone who would take off with snow jammed into the engine was a candidate for an insane asylum.

BILL MUNROE, JR.

West Yarmouth, Mass.

READ THE FINE PRINT

before you buy a so-called autopilot

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FULLY AUTOMATIC HEADING LOCK—NO NEED TO PRE-SELECT HEADINGS					✔
INSTANTANEOUS SERVO RESPONSE			✔	✔	✔
PROPORTIONAL SERVO RESPONSE	✔	✔		✔	✔
FOLLOW-UPS—PREVENT OVERSHOOT, PERMIT USE OF HIGH-POWER SERVOS					✔
AUTOMATIC PITCH TRIM			✔		✔
ALL-ELECTRIC CONTROLS—NO MECHANICAL ENGAGE-DISENGAGE, NO DELICATE VALVES			✔		✔
AUTOMATIC ALTITUDE CONTROL AVAILABLE					✔
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This tabulation of essential autopilot features was gathered from manufacturers' specifications, current as of September 15, 1957.

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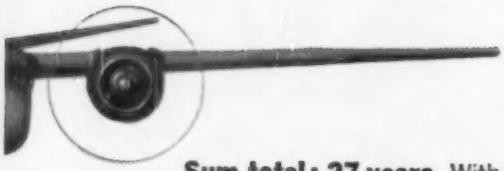

Sum total: 27 years. With many firsts along the way. The first military plane with retractable landing gear. The first carrier-based aircraft with folding wings. First swept-wing jets on operational service with carrier squadrons. First in the air with area-rule (coke bottle) fuselage for fighters. The first aircraft capable of performing the complete search-attack mission against subs. First in amphibians with the production of more such craft than the rest of the world combined. First with two-place transonic jet fighter-trainers.

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HAVE YOU READ?

By JAMES F. SUNDERMAN

AIR FICTION

The novel is a popular but largely neglected element in air literature. This anomaly is explainable. The requisite for good aviation fiction is understanding and appreciation of the air beyond that required for technical reporting. Hence, little commendable air fiction is being written. Most of it is in military setting. Several recent novels are reviewed here:

THE HUNTERS, by James Salter (Harper & Brothers, $3; Bantam Books, 50 cents).

This story out of the Korean War ranks near the top in recent air fiction. The author, writing under a pseudonym, is a MIG-alley veteran. He draws on personal experience to construct a fascinating tale about the men who slew the Russian MIG's high above the Yalu River. Acclaimed by some critics as surpassing Michener's, "The Bridges at Toko-ri," Salter's book probes the minds of jet air warriors and explains the values by which men live and die in air combat.

The setting is the AF's Fourth Fighter Interceptor Wing at K-14 (Kimpo Air Base, South Korea). Here a man's worth is measured by the number of MIG's he shoots down. Salter spells out the emotions and tensions of fighter pilots intent only on meeting this one standard.

ROLL BACK THE SKY, by Ward Taylor (Henry Holt, $3.95; Popular Library, 50 cents).

This book features the men who flew the low-altitude, fire-bomb raids to Japan. Captain Richardson, the hero, has courage but isn't sure when it will run out; and, if it ever does, what kind of a creature he will become. The constant preying uncertainty of his own limitations provides him the drive that carries through a dramatic career. The author, a combat veteran of the Pacific, weaves a story rich in description of flying and accurately based on knowledge.

MAN IN THE SKY, by Richard Hubler (Duell, Sloan and Pearce, $4.95).

This is a rambling story of a fast-living, reckless "wild-blue-yonder" fighter pilot in WWII who can make sense out of his whole pattern of life only in the cockpit of his fighter, away from the realities of day-to-day existence.

Hubler creates a complex character, then tries to dissect him and find out what makes him tick, as he pursues a bizarre career from Marine pilot and AVG Flying Tiger to a postwar Israeli air volunteer and finally, an Air Force test pilot.

Though the plot is wholly unrealistic, Hubler writes about flight and air combat with realism and a descriptive flair. His unusual, attractive style is about all that holds the book together.

LOOK OF THE EAGLE, by Robert L. Scott (Dodd, Mead, $3.50; Ace Books, 50 cents).

If judged by Scott's one-time best seller "God Is My Co-Pilot," this one barely gets in the running. It is a yarn of high adventure that explores the area of jet flight. Scott, veteran jet and prop pilot, is at his best describing the beauty of high flight. He doesn't quite succeed in his purpose to explain what it is, deep down, that makes a man want to fly.

SQUADRON AIRBORNE, by Elleston Trevor (Macmillan, $3).

By far the best of recent European air novels, it is based on an RAF fighter squadron during the darkest days of the Battle of Britain. Trevor's men are the "few" to whom Winston Churchill said the world owed so much. The plot weaves around the emotional forces that played on those men and the tensions of those who waited on the ground for their return. Colorful detail blends well with remarkably accurate description of air action.

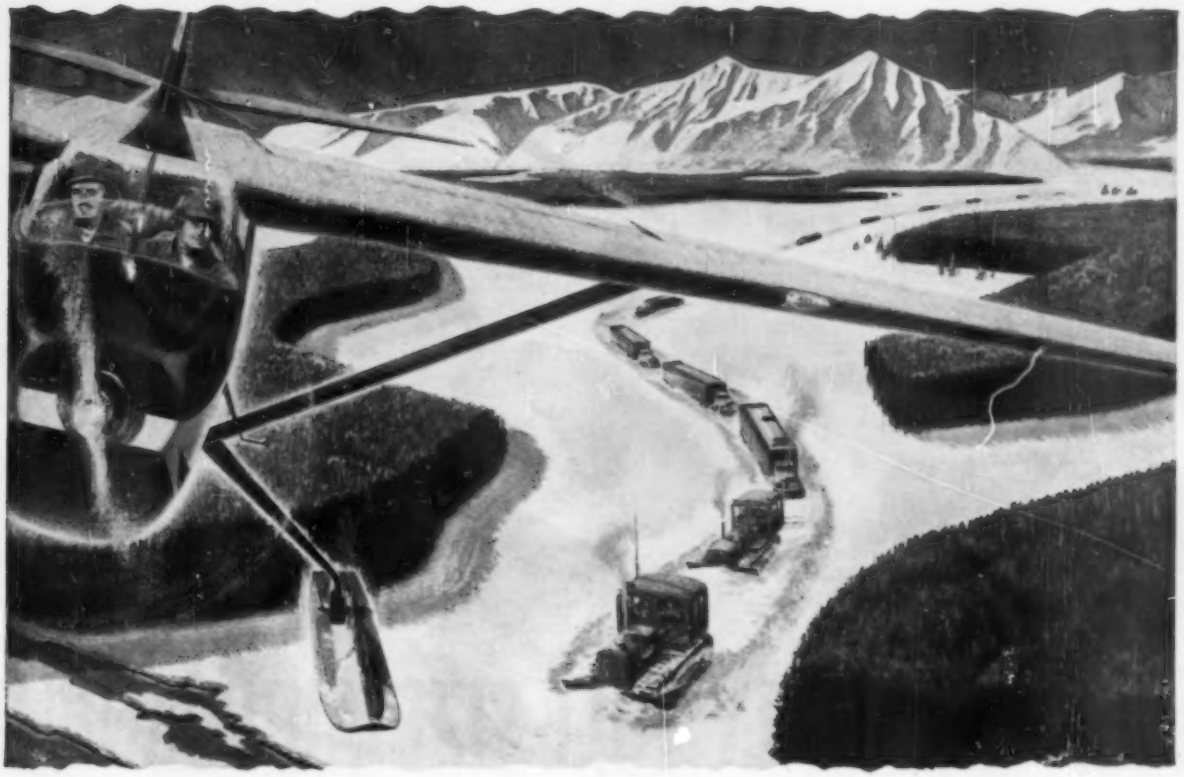
THE LAST SQUADRON by Gerd Gaiser (Pantheon Press, $3.50).

Gaiser, former Luftwaffe pilot draws upon his combat career to create a drama of the European air war from the other side of the fence. His story is about a Nazi fighter unit defending against the growing Allied bomber offensive out of England. It climaxes in that sliver of time history dubs "the big week," when Allied air forces wrested air control from the Luftwaffe. For the German pilots a new world unfolds, the world of defeat. With it comes a terrible inner conflict to those suddenly realizing that they fight for a lost cause. Within the framework, Gaiser tells of the last days of a proud fighting air

(Continued on page 69)

PLANE FAX

by STANDARD OIL COMPANY OF CALIFORNIA

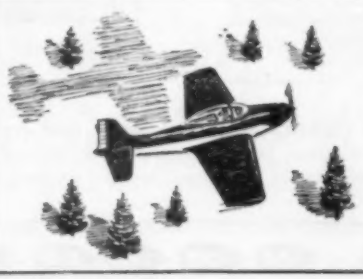


Breaking trail by air for Alaska "train"

Flying above the far north's trackless snow, Hawley Evans led this overland "train" carrying radar defense equipment to the shores of the Arctic Ocean. Giving directions by radio, he scouted safe passage over mountains, across steep gorges, between icy lakes in temperatures down to 68 degrees below zero.

"In that kind of weather," says Mr. Evans, "you really want to be sure of your plane. I play it safe as I can, with Chevron Aviation Gasoline. I've found that Chevron gives me more power on take-offs than any other that I've tried, and comes through with all the extra power I call for when I'm in flight. Even in bitter cold it keeps my engine running sweet.

"Another thing that helps make my flying safer, I'm sure, is RPM Aviation Oil. When we overhaul customers' engines in our shops at Fairbanks, we can tell the ones that have been on 'RPM'—they're always in good shape. It gives us many extra flying hours; keeps rings and valves free for the life of the engine. Even when it's pre-heated to the boiling point, it never breaks down."



TIP OF THE MONTH

Mr. Evans suggests that planes used in snow country be painted a bright color on top. Silvery surfaces often become invisible against the brilliant white background.

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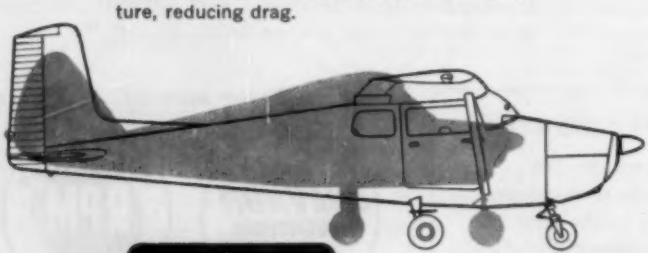

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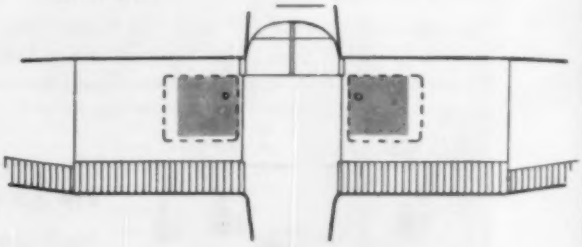

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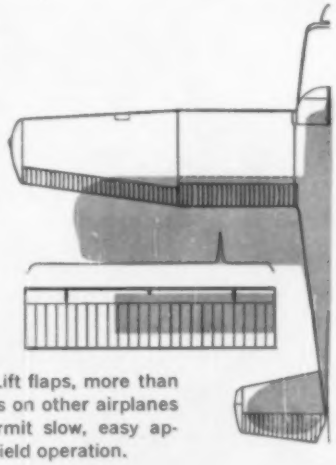

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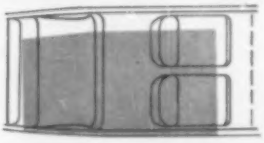

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AN OPEN LETTER

MY SOUL WRITHED with indignation when, following World War II, the free nations defaulted their mission to humanity and permitted the Soviet Union to set up satellites of the Balkan countries, East Germany, Czechoslovakia and China, and this fundamentally because the spokesmen of constitutional government led by American policy makers did not comprehend the significance of the air environment which at the time was almost exclusively theirs to command.

It required no gift of prophecy to foresee the evolving result. And already this visionless attitude has delivered over to the Soviet the opportunity to set up additional satellites of such significance as to introduce man to the frontiers of his universe.

Having lived to see this day, I well may live to see the ultimate cumulative effects of this astigmatism in tragic climax unless American leadership comes to look with the eye of moral responsibility upon the air environment in which the fates of peoples and nations will be forged henceforth for centuries.

Year after year and decade upon decade, I have pled and warned that the air environment is more than an area of mechanical contrivance for telescoping distance and compacting time. It is a measure of the imaginative will and dedication of a people to project their ideas and ideals. If these ideas and ideals are no longer a great motivating force in their lives, the fact is quickly evident in their apathy toward opportunity to project them. And, of course, such a condition is accurately indicative of the decline of any nation as leader of Civilization.

Our enduring danger is not communism per se. Communism, with its vast cynicisms for the dignity of the human being and its disregard for the deeper instincts of society, had but one purpose to serve—revolution. But society can not live continuously on revolution. Already Mr. Khrushchev has had to portray Stalin and his revolutionary regime as devils, and to cast the Molotov coterie and even Zhukov into outer darkness. He had no other choice—either that or disavowal of communism as a productive ideology, an untimely action. Already, the blood, sweat and tears of revolution had become a surfeit. A communist leader today must promise the people peace, prosperity, and prestige just as must the spokesman of any other political formula.

The leadership of the United States had an unparalleled opportunity to contain communism in its revolutionary context, where it would wither as provenly unproductive of anything but ceaseless toil, endless frustration and constant fear.

This golden opportunity for American statesmen lay in the air environment where continuous and unmatchable American achievement could markedly stalemate anything achieved in the name of communism. Every free thinking man knows that Soviet technological triumph is not the product of Marxism but that it can and is made to appear so by a controlled propaganda. (Actually the Kremlin took the free enterprise tenet of "incentive reward for the individual who makes good on his opportunity," and turned it against us in the name of communism.)

But American leadership has adamantly refused to recognize the air environment for what it is—the frontier of modern statecraft, the portal to fresh intellectual horizons, the atmosphere of a better human destiny. Having all the proven physical possibilities to make the globe manageable and disciplined for a united human family, the air environment still could not be envisioned by our leaders as the one essential area in which the United States must be superlatively progressive. As a result the blind have led the blind into a ditch. Red leaders, seizing this situation in the name of communism, have bridged the chasm between where their cruel and bitter ideology stood as a tool of revolution, to attain a psychological plateau where it now stands, although in false colors, as a political system capable of offering its people the scientific and intellectual leadership of civilization.

Today the Soviet satellites are the cocks crowing up the sun of the cosmos as man mounts the ramparts of the universe. Concurrently, evidence denies the American potential to forge its mission to civilization in this vaster environment. Only reorientation of American statecraft and a consequent rebirth of national character could contrive this miracle and I see no stirring consciousness of such necessity.

THIS is a bitter realization. With a myriad others, I had hoped that our own people and government would lead the nations into the new environment. I had trusted that our constitutional republic and free people would design their unborn something better than a second rate fate. Self-government is the most desirable of all social systems. Freedom is the greatest of all boons. But these jewels are available only to those who cherish them. And although we Americans have shown an amazing capacity to rise to emergency, this capacity diminishes sharply in the dynamic air environment where the pace of history too is supersonic.

From present evidence it seems questionable that our tragically abused western experiment with self-government will survive the turn of the next century. The pattern of decline and fall which has brought all former empire to its knees is becoming vividly apparent in the

TO THE CONGRESS

tapestry of our national life. The very concept of nationalism appears fragmented by our divisive forces. Our advances into too many fields of human progress lately have been forced upon us by circumstance rather than elected by the dynamic of our own vision.

Where dire necessity has forced some notable phase of technological superiority such as the long range bomber, the atom bomb, the jet engine, the supersonic aircraft, and guided missile, we have sat on the accomplishment until our lead time was dissipated in each successive case and fresh emergency was created—the Soviet achievement of power to hoist the intercontinental missile and the earth satellites being the latest example in point.

IN view of these evidences of an habitual pattern of expediency in such a fundamental as defense, we are now forced to consider the possibility that our government has become both bureaucratic to the point of ineffectiveness and helplessly vulnerable to the divisionary effects of politics.

The unhappy evidence is voluminous and progressive. No political administration can escape its indictment. Furthermore, we the people, are a party to it—palsied patriotism, materialistic self-interest, class antagonism, intellectual apathy. We deserve little.

But inspiration and vision should come from the top, and our statecraft has not been inspiring or effective for many years. In fact, it has been impoverished in spirit, wavering in judgment and barren of vision. Though the blood of the citizen has purchased victory that the land might be secure, our leaders have been unable to capitalize on the sacrifice. Even peace has eluded them. Though the young pilots and the artisans and scientists have stood ready to exploit the universe for the national security, the government does not take advantage of their readiness. Though the airmen, the trail blazers of the air environment, again and again have demonstrated their adequacy as an instrument of national policy, the government refuting the evidence, has compromised with its mortal enemies—murderers, assassins and atheists though they be—and actually set them up in business—Germany, the Balkans, China, Korea, the Northern Pacific, and now the Near East.

All of this has transpired impartially during successive political administrations to the point where the gravest danger faced by the United States has become public loss of confidence in government. Nor can this circumstance be ameliorated by avoidance. It must be met head on or not at all. And not to meet it is to court intellectual anarchy.

Mark this. The burden of public concern is not that the Soviet aggressor achieved an immediately decisive weapon in this intercontinental missile and satellite. Knowledgeable people understand full well the timing of transition between manned airpower and effective push button war. The great concern is that the enemy achieved these competitive goals as the result of his timely educational program, his accurate viewpoint on the significance of the air environment, his policy of incentive for the industry and science which must create the tools of the new environment, and within a framework of non-competitive military services. All of this is in direct contrast to our own activity in these respects. And to confirm the public concern is the fact that the Soviet attained these goals in the face of continuous American complacency; that the enemy made a revolutionary break-through at a time of deliberately curtailed American effort; and that the administration of the American effort is so hopelessly mired in duplication, waste and extraneous considerations that no amount of budget could adequately serve the lead time of national security.

We must view this current crisis in defense affairs against a broader context than its economic factors alone, vital as they are, for though we give full acknowledgment to them, we find no logic in government's formula for economy.

GOVERNMENT's prelude of propaganda to recent curtailment of defense funds was "qualitative superiority." In presenting this thesis the spokesmen contrasted the effectiveness of our modern weapons systems to that of predecessor systems. A supersonic bomber with a hydrogen warhead has greater devastating power than a former Wing of B-29's and, since there are only so many enemy targets to be saturated, we would need only so many bombers—that sort of thing. The intent was to prime a favorable atmosphere for stretch-out and curtailment of quantity. Actually, the only sound estimate of adequate quantity is based on comparison with enemy capability. More important to knowledgeable people is the fact that in advancing qualitative superiority as a substitute for quantitive supremacy, government was depending on the most speculative, elusive and intangible factor that could be considered. And sure enough, the recent revelation of Soviet technology has knocked the "qualitative superiority" thesis into a cocked hat. Its enduring damage was that government espoused it seriously and caused speculation about the reasoning power of our defense philosophers.

When the full extent of the defense curtailment was activated, its blight fell immediately on the aircraft industry, traditionally the victim of various political moods and

now dealt a blow of unparalleled proportions. Since this industry is the prime source of tools for the air environment, the swift and undoubted weakening of its structure calls the judgment of government to sharp account. Whether there was intent to throw this industry into nationalization or depress it for capture by other interests, or intent to create an atmosphere for the greater participation of general industry in the air defense field, is subject to controversy. But there can be scant controversy that these effects are the result. That government will save in long range expenditure for airpower by disruption of the aircraft industry is too illogical to be debated.

But perhaps it is futile to discuss such detail when the entire matter traces to the fact that no national administration ever has grasped the significance of the air environment. Nor perhaps should I be using the term, "air environment" without more explanation.

IN EARLIER periods of history, military power was restricted to the bridging of land masses alone. Nations were competitive in terms of armies. Power was exercised in the environment of land geography.

Then came the age of seafaring. Nations became competitive in overseas discovery and conquest. The environment of a nation's strength was a blending of armies and navies. But whether the strength involved was in terms of land geography or ocean geography, it was in the environment of surface activity. This pattern was static over many centuries and strong organic military establishment developed as its expression. As the industrial revolution matured, the military establishment gathered vast economic, social and political influences around themselves. In time the term "the military mind" came into use. The "military mind" was not the mind of the soldier or sailor. It was the self-interested static mind of all the influences gathered in the old military complex.

Then suddenly, within a handbreath of time as military evolution is measured, came the radical and unprecedented new environment—the environment of the air. It ran headlong into the complex of interests which comprised the traditional environment. When government was forced by irrefutable evidence to recognize air potential, the traditional establishment and all of its allied interests attempted to contain it. The hope was vain. Its ferment burst out of the old wineskins despite all that bureaucracy and its customers could do.

Eventually, in World War II, the environment as the decisive area of action was so exemplified that the traditional combination of interests which formed defense bureaucracy had to be extenuated to make place for it. Its power was such that two of its strikes, as at Hiroshima and Nagasaki, could make unnecessary the clash of vast conventional armies. Its ascendancy over surface naval power was such that ships dared not put to sea without its protection. So a new national defense act was contrived to make place for airpower. Against this act, I and many others railed unavailingly.

And what was the result? The result was a hydraheaded compromise of military, industrial and political influences which assigned airpower a role—which it later refuted in Korea—but denied that national destiny almost solely rested with the new environment.

The result was an economic monster whose hunger devours the national income without assuring the national defense.

This intellectual travesty is represented to the American people as balanced power. In some respects, it is indeed balanced. It is balanced politically; balanced to usurp military leadership by secretarial bureaucracy; balanced to consume the taxpayer; balanced to generate unrelenting interservice bitterness; balanced to compromise every known tenet of military command; balanced to swallow the talents of great officers in all services; balanced to require conscription; balanced to waste manpower; balanced to assure the Soviet lead time in technology to the point that American conquest probably eventually will be accomplished without a shot in self-defense.

But in so far as being balanced for the prevention of war; or balanced to secure the most defense for the least cost; or balanced to maintain a firm air defense industry; or balanced to lead the United States into the cosmic phase of the air environment, no contrivance was ever more ill-fitted to its mission. And not until government focuses defense in the air environment with all else in the perspective of support will order come out of chaos.

The American people have fondly believed that the nation stands well in comprehensive airpower. This too is a delusion. If war were to be fought today, the gaps in American airpower in such fundamental respects as logistic capability would shock the citizens to their heels. Maintenance of global air bases by air transport under war conditions would be impossible to all existing civil and military transport combined. True, some hold that war with atomic weapons would be concluded before the necessity for logistic supply of global air bases became necessary. And it would be if war were a game of chess or an exact science. But it is neither. It is a study in errors. If there is war, it will be awful and punishing to all concerned but it will not necessarily be short in duration nor will its aftermath of policing be less onerous than its conflict. Furthermore, the survival and relief of the civil population in actual atomic war would require air logistics to a degree almost beyond calculation. But there are no funds to develop air logistics because defense funds are consumed out of air environment by compromised political and military policy. Certainly this does not fit into the party line of the Air Force any more than it adapts to the party line of any other branch of service, but I am not interested in party lines. None of them has prevented the present situation and none of them has that capability under present defense organization.

NONE the less, let it be noted that the dedication of the man in uniform represents today the best cross-section of intellectual integrity and national devotion to be found in all the United States. The great preponderance of men and officers in all military services are as fully frustrated as is the cause they serve. The national defense as constituted and administered is a torture of their morale and a distraction of their devotion, the Army man, the Navy man and the Marine no less than the man in Air Force blue. There are thousands of officers and men in every service who would sacrifice their careers at a moment's notice if thereby they could serve their country as did Butler of the Marines, Simms of the Navy, MacArthur of the Army, or Mitchell of the Air Corps. Within weeks, I have had certain of them ask if I could assist them to bypass the bureaucracy so that they might lay scientific suggestion on the desk of leadership. In cold realism I had to warn them that individual action is not the answer to our confusion; that the system must be changed; that the summit is well insulated from such as I; and that the country needs them too much to have them needlessly sacrificed. Incidentally, these were not Air Force officers.

What now can be done to deliver the American people and the cause of constitutional government to a more certain future?

Nothing can be done short of a rebirth of national char-

acter. It requires time to make amends for the years of visionless education which have cursed our masses to mediocracy. How does one restore overnight the political sanity of a republic that, bastardized into constitutional socialism, bids competitively in the franchise market place for the favor of self-seeking minorities, wealthy patrons and class conscious demagogues? How does one inspire a national conscience that sits in conference with despots and compromises with the bloody handed to escape the ordeal of defending freedom? How does one protect the innocent and punish the evil in a system of law that practices the techniques but not the spirit of justice? How does one reason with a public mind that classes the years of youth devoted to service of country as "lost years"?

I am not even sure anything can be done because there are none so sightless as the willful blind. Despite the fact that the air age self-evidently opened windows to fresh scientific exploration, revised the pace of responsibility for good or evil, radically changed the relative stature of nations and made civilization thrice sensitive to its moral and spiritual concepts, we airmen have been just "aviation enthusiasts"—an epithet rather than an encomium.

So I have no illusions—only cold hard comfortless fact to lean upon. It may be too late to arrest the declining light of the American mission to humanity. Government is too unwieldy for action, too preoccupied by politics, and the citizenship is too fragmented by lesser loyalties and too wedded to special interests to use the franchise for dedicated purpose. I and mine are committed to share the common fate of all. But we do not have to like it. And at least we are privileged to walk with our eyes open. And maybe that is enough.

ON THE other hand, the enemy at our throats may make vital blunders. If we are ready to take advantage of them, as he was in turn of our visionless policies, the tide might flow again to our future. And of course there is always to be considered the inscrutable patience of God. On the thesis that we are not scrubbed by the latter and that the Soviet is not all wise, we can base our hopes and find motivation to seek rebirth of the Republic. Such a project is vast and time consuming but certain initial moves can be made.

In the first place the leaders must get up and lead. In the second place the unseemly jousting for partisan advantage in the face of national crisis must be subverted. And in the third place the people must be taken into the confidence of the government. "Little business" especially among other vital segments of our national economy has long felt exiled. This is intolerable in view of the fact that the Soviet Union is an industrial giant rivaling America. Government must give fresh regard to incentive for free private enterprise. It is not healthy that most of our industry finds scant enthusiasm for doing business with government because it has no confidence that government has business sensibility.

But in any case, whatever the first successive steps may be, the main theme must be to create an atmosphere in which the nation can be put confidently to work in a spirit of determined unity.

I am not so naïve as to lay out on a piece of paper a program for the Congress. The Congress knows full well what steps can be taken to eliminate waste and duplication and to bring responsibility back of technological research. There is no lack of brains and experience in the Congress to assure adequate defense at a cost the nation can afford. The will of the Congress rather than its ability contains the key to the situation. And that will must focus on the air environment for there and there only lies possibility of recovery for the stature of the nation.

It can and will be denied by many that the Soviet satellites indicate a background of industrial, educational and scientific power superior to our own. But "by their fruits ye shall know them." And Soviet fruits have been ripe and abundant. How quickly they caught up on the long range bomber, the atom bomb, the supersonic fighter, the guided missile, the jet transport! So, not in itself but in its connotation, the Soviet satellites are the gravest of warnings against excuse or complacency.

Whatever is done immediately in counter measure to the Soviet technological achievement must be of such practical nature as to seize the offensive from the enemy. Many avenues might suggest themselves while the satellites are still in a speculative stage as a military achievement.

ONE such would be a crash program to make the supersonic nuclear-powered bomber operational. Although no indication has come through at this writing, it seems reasonable to judge that the satellites have been hoisted by at least an initial application of nuclear power. A truly operational stable of unlimited range, high performance, manned bombers would swing the military balance of power sharply to their possessor and go far to stalemate the possibility of war for a reasonable stretch of time in case their operator were a free nation.

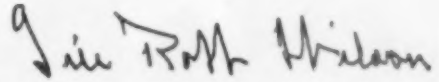
I do not think it wise to speculate openly on various possibilities but they exist in the air environment and lack only funds and sound organization to bear fruit. I mention the nuclear powered bomber only because I am confident the Soviet satellite has connotations of Red exploration in that direction.

Now I wish to assure the reader that I have no pleasure in setting our present critical situation against a background of deteriorated national character, nor do I have aught but good will and sympathetic hope for those who bear the heavy responsibilities of our fate. Out of the history of many nations and peoples who have risen and fallen in their day, I can see how difficult it has been for our own leaders and people to turn away from a trusted and proven environment to pioneer in the new and strange. I can see how kindly motives and a sense of good will have wrecked the checks and balances of a Republic in the name of democracy, although there never was a successful democracy in all time and there never will be. I can see how the passion for peace, just like the passion for conquest, contributes to tragedy worse than war—slavery and the death of the spirit and darkness of the mind.

So, I have no alternative but to lay the cards face up on the table and read the spots as they lie. It is a time for a free man to stand up. Certainly recrimination of any is furthest from my intention. It is even probable that, if my confreres and I who have lived our mature lives in the air environment had been more articulate and less selfish competitively, we would have had better audience.

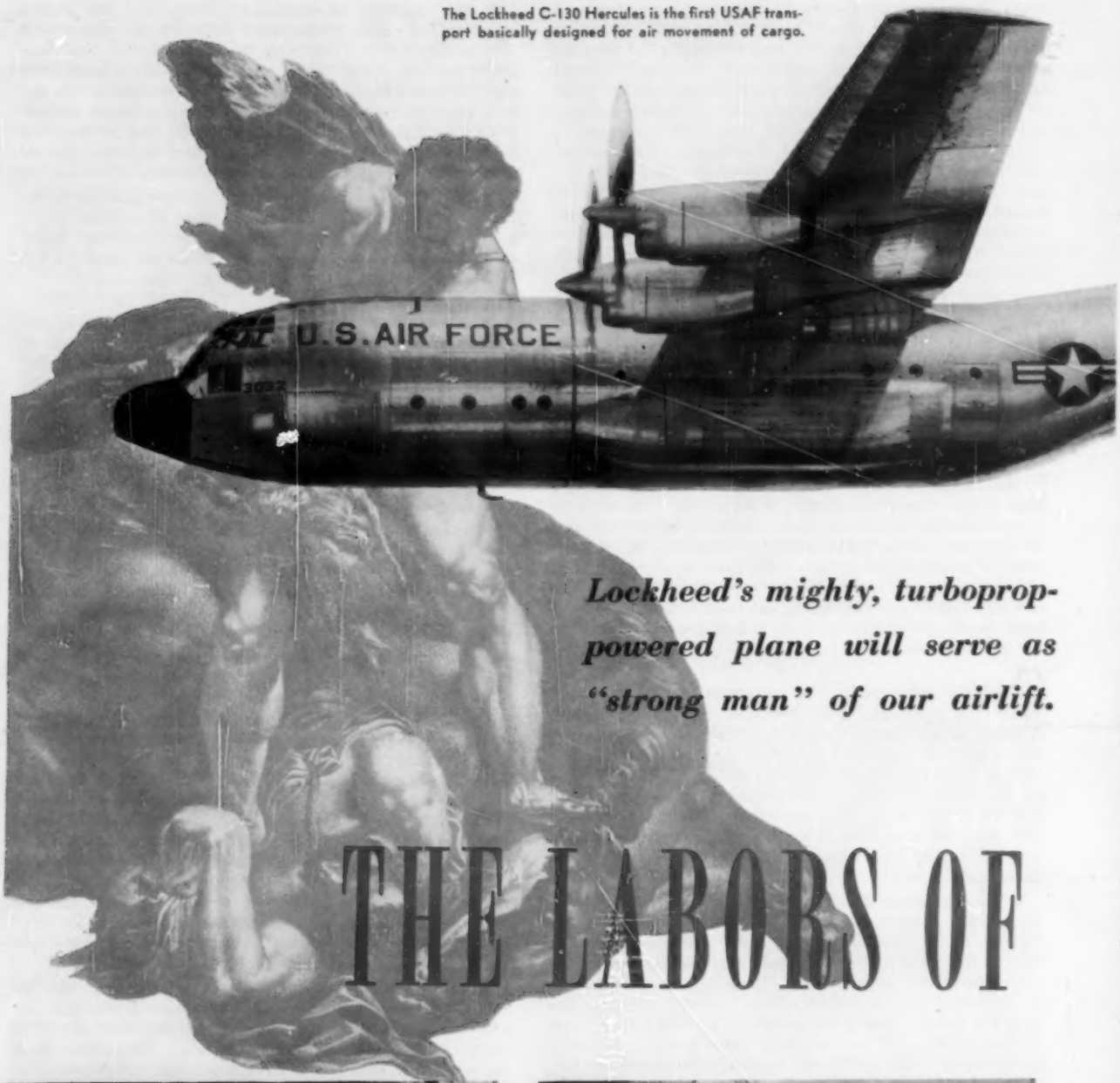
But regret over the dereliction of others or of ourselves is now alike unproductive. The entire regime of freedom is at stake and nothing less than a soul searching of our national character will serve as a turning point to retrace to where this beloved land stands once more with its mission to civilization renewed and its strength mightily repaired.

God help us all to help ourselves.



GILL ROBB WILSON
Editor and Publisher

The Lockheed C-130 Hercules is the first USAF transport basically designed for air movement of cargo.



Lockheed's mighty, turboprop-powered plane will serve as "strong man" of our airlift.

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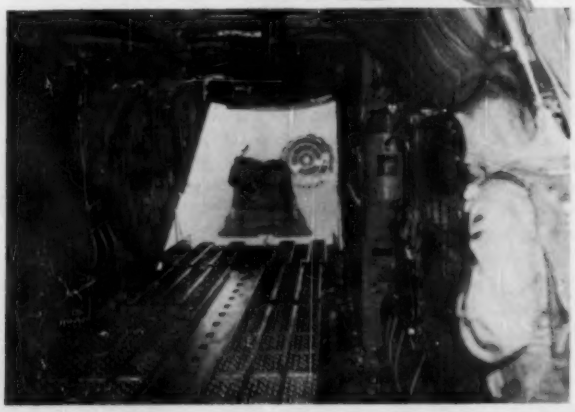
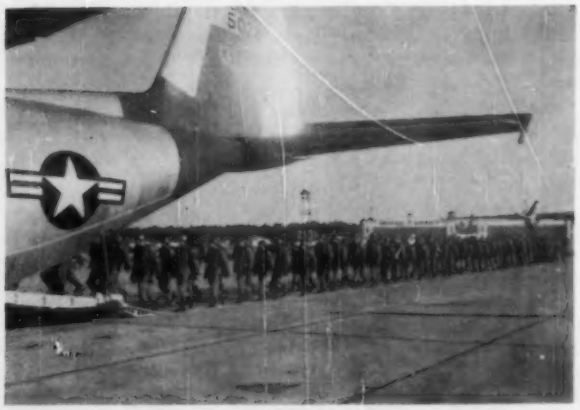


Dropping supplies and heavy equipment by drag-chute extraction.



No less than 92 troops march up the loading ramp to board the C-130.

Tests have been completed successfully on a ski-version of the C-130.

HERCULES

By JOSEPH VOLNEY

Loading and unloading is easily accomplished in a matter of minutes.

HERCULES OF MYTHOLOGY was a character conjured to cover a lot of territory and perform a wide variety of prodigious feats in jig time—a logistician's hero. Whether Lockheed had his "twelve labors" in mind when developing specifications for their new all-purpose military transport, is problematic. In any case, the Allison-powered aircraft turned out by the Georgia wing of the company is well-named—Hercules. There is nothing of "she" or even "it" about this craft—the Hercules is a rough, tough "he" airplane.

This aircraft, first production turboprop in the American stable, was designed to the concept of longevity rather than to fill a temporary role. No aircraft in military history has had more planning for logistic versatility: turboprop power for accelerated take-off and reversible prop brake power for restricted areas; cubic capacity for bulk cargo; long range at good speed for both lower and upper altitudes; aerodynamic efficiency for variable loads and maneuvering ability; stresses to absorb reaction following heavy cargo drop; gear adaptable to variable landing surfaces; apertures for easy loading as well as for discharging cargo and troops aloft or aground; and a multitude of other important provisions.

Hercules is designed to move armies over long distances and most of the equipment they would need. But he likewise is designed to pick up wounded out of a hot spot and shift them out of the area of action. He can carry atom bombs across an ocean or can tactically carry a hundred rifle soldiers a hundred miles and parachute them on top of a hill. He can load himself up with extra fuel and keep a tank column moving across a desert. Or he can sit down on the ice and bring supplies to icebound Marines. He can take missiles to the missile sites—near or far—and can even drop missile launching equipment.

The 15,000 pounds of thrust in Hercules' Allison T53 engines can drive him across a continent or an ocean and at the end of the journey, he can sit down on almost any airport safe for lightplane operation—yet his "A" model has a gross weight of 124,000 pounds, and his "B" model, with T56-A-7 engines, 135,000 pounds.

Already the Hercules, although in squadron service less than a year, has shown exceptional potential for numerous labors—cargo carrier, troop transport, tanker, evacuation vehicle, paradrop battlefield consort. With a normal cruise of 325/340 mph and a capability of flying at jet altitudes as well as economically down among the boondocks, the aircraft has an adaptability for many defense services—and indeed for commercial aviation.

Any informed airman knows there is no such thing as an all-purpose airplane; but he likewise knows that the aircraft with the greatest versatility has the best chance to leave its name in aviation history. Potential users seize upon such a type as a gift of the Gods and make infinite tests of it in the hope of being able to do something they never before found possible.

It is logical then that the C-130 already has been thrown up against every conceivable climate, condition and challenge. He has had months of service test in arctic ice and snow at deep subzero temperatures. He has been tested in a 16,000-mile jaunt around the peaks of the Andes, where high altitude airports challenged his performance. He has been operated from sand bars and mud flats and sod strips and short runways. He has been put down and lifted off spine-jarring, rough terrain. He has made the heaviest cargo drops ever attempted from an aircraft in flight—in one instance a 27,000-pound piece of equipment from an altitude of 2,000 feet—a fantastic strain to put on an airplane!

Of course, much of this versatility could have been anticipated, yet the proof of the pudding is always in the

Only 800 feet of runway were used by the first production C-130 Hercules in an eight-second take-off run on the morning of its maiden flight.

eating. Aircraft types of great import are no longer designed and built with "hoped for" utilities in mind. The method they now employ at the policy level is to compile the longest conceivable list of hitherto impossible capabilities and give a contract to some manufacturer who most successfully proves in design competition that he does not think the policy makers entirely insane. Then, while the aircraft is being put together in prototype form—airframe, engines, props, etc.—the policy makers conjure up jobs an airplane might be called up to do 20 years hence; and tell the manufacturer to feed these into his planning. Considering the dynamic requirements of the atomic phase of military science, the design and planning of aircraft which are not obsolete before they first fly is an exciting business. It was once literally true that in contrast with what was on the drawing board, most new aircraft had but temporary roles in prospect. Such a situation served its time but is no longer tenable—just too expensive—and the state of the art, along with new forms and amounts of propulsive power has lifted the ceiling of potential longevity for planes which have original imaginative concept in planning.

The Hercules came out of a design competition which culminated in July 1951. Having won the competition, Lockheed was told to start work on prototypes of the plane, officially listed as the C-130. During this period almost every board and agency of the Defense Department had a finger in the pie. The Air Force coordinated the fingers. Experts on the required high mobility of atomic war traded ideas with the logistic experts of past wars.

The statistical conclusion of all this is a low slung, high wing, multiple geared, four engined, project vehicle with a wing span of 132½ feet and a length of 97½ feet. The "B" model has four-bladed constant speed Aeroproducts propellers and an increased engine-propeller gear ratio. Props on the "A" are three-bladed. The resultant reduced propeller tip speed and the increased distance of the prop blades from the fuselage mean added quietness and freedom from vibration. The B model has fuel tanks for an additional 1,820 gallons of JP. Beefing up of the landing gear and structure takes care of the added weight and the advanced Allison T56-A-7 engines of higher horsepower give the Hercules both more range and speed without sacrifice of the maneuverability which characterizes the C-130A.

The C-130's testing has been on terrain and under conditions akin to those found almost anywhere in the world. Crews of the Air Force's Operational Test Center at famed Eglin Air Force Base put it through the hoops of tactical air requirements in Europe and Alaska. Air Research and Development Command worked it out on northland ski gear. Hercules is the heaviest aircraft ever to use skis. The 463rd Troop Carrier Wing of Ardmore AFB, Okla., ran it through tropical conditions in military maneuvers with the Caribbean Command in Panama. Navy has done the tanker testing with a view to refueling of the Marine fighters. Lockheed pilots themselves have wrung Hercules out in every sort of wind, weather, cruise control, weight lifting, slow flight, fast flight, hard landing, short stopping and other contingencies they could dream up. Probably the most intriguing test of all was one carried out beneath the water to determine by scientific means any possible fatigue point in the future life of the propjet Hercules. This is the most effective of all ways to determine desirable modifications. A great airplane lends itself to many modifications. A mediocre one can't.

The Allison T56 engines of the Hercules were especially built for this aircraft. This power plant, rated at 3,750 equivalent shaft horsepower (shaft power plus its additional jet thrust), delivers 2.3 hp (*Continued on page* 83)

The C-130B Hercules has four-bladed Aeroproducts propellers on his Allison T56-A-7 engines which give more range and speed than the C-130A.

Left: The author as photographed by his wife at Aspen, Col. Above: After landing his Cessna 180 at just under 10,000 feet near the lift at Squaw Valley, Col. with his friend, Stein Eriksen.

Using the techniques taught him by a famous Swiss glacier pilot, an American is conquering the slopes of our snow-clad Rockies.

U. S. Mountain Pilot

By JOSEPH B. THOMAS, IV

THE SUN WAS CUT OFF by a gray sky. The mountains were lost in cloud, and mist swirled damp and cold over the smoking chimney tops. Our ski trip up over the glacier to Cervigna from Zermatt, Switzerland, was out. I wandered in disappointment down the main street toward the Zermatt Station to wait for the train back to Austria, stopping at a book stand en route for some reading material for the trip.

As my eyes passed idly over the array, I noted the picture of a ski plane on the jacket of one of the books. Its title, "Geiger, Pilote des Glaciers" excited my curiosity. I pushed five Swiss francs across the counter, took the book and was absorbed for the next few hours. The tale was of Hermann Geiger from Sion, Switzerland, who routinely landed on the highest glaciers in the Alps. He had set his Super Cub down near the top of Mt. Blanc at over 14,000 feet!

This was not just a stunt, but a business with him. At first he had dropped supplies to the remote mountain villages, to the trail huts and workers and climbers of the peaks. For several years most of his income was derived in this way. Finally, he acquired skis for his plane and by the time the book had been written, he made over 5,000 landings on the high glaciers.

The book went on to describe Geiger's landings on 300 slopes and take-offs over precipices. The more I read, the more intrigued I became with the possibilities of doing this in our western Rockies. At first opportunity, I visited Mr. Geiger in Sion and subsequently spent a week of indoctrination with him, being checked out in mountain and glacier flight techniques.

The first flight in this course was complicated by broken clouds obscuring the mountains. Finding our way up through a hole, we climbed to 12,000 feet, switching back and forth up the side of the Rhone valley. Above the clouds the mountains shone with a coat of new powder snow; the air was completely smooth and without a breath of wind.

Geiger headed for a small Glacier on the "Diablerets," just north of Sion, and circled over a smooth area sloping at an angle of about ten degrees. Having looked over the snow carefully from the air, he throttled back and approached the slope. I had expected the approach would be as slow as possible, but this was not the case. Instead, we seemed to be rushing at the snow with much too great a speed, far above stalling.

As we touched down, the feeling was that of settling into a big feather bed. Geiger instantly applied throttle and raced uphill skimming on top of the snow. Still holding a speed of 20 or more mph, he applied hard left rudder. We described a neat, tight 180-degree on the snow, the slope automatically banking the turn (*Continued on page* 56)

The author, her husband Norman, and friend Lillian Heimer (center) at the airport at Tepic. Sugar cane field forms background.

OFF-BEAT RESPITE

Looking down on Mazatlan. The hill at the rear overlooking the harbor boasts the world's second highest natural lighthouse.

Map of lower California and the west coast of Mexico showing route from Nogales to Tepic followed by the author and her husband in their Navion.

Want an excitingly different vacation? Then fly down the west coast of Mexico where the charm of a different way of life casts its spell in a glorious tropical setting.

By DIANE L. McLAREN

A tanker emerging from the breakwater at Mazatlan as photographed from the Navion.

SOUTH OF THE BORDER

A banana plantation at the head of the river in the jungle of San Blas.

JUST IN CASE something happens—what kennel did you put your dogs in?" my mother asked nervously. I reassured her that it was perfectly safe to fly down to Mazatlan and San Blas, Mexico, on a week's vacation in a small plane. We would not be devoured by jaguars or devilfish and we would return in time to feed the Spaniels their Sunday dinner.

When Jack Heimer and his wife, Lillian, first approached us about flying to Mexico, I was a little apprehensive too. All of us had driven down on the Pan American Highway on three separate occasions, but flying would be entirely different. I finally reasoned that my husband, Norman, was no tyro around airplanes; he had been a pilot in the Air Force during the war; and Jack and Lillian have flown their Navion on both business and pleasure trips for years. And the best time to go to Mazatlan and San Blas is during the dry season, from October to April.

If off-beat places fascinate you and the lure of the tropics appeals and you relish tales of pirate ships, the trip to Mazatlan and San Blas should be your dish. As soon as you file your flight plan from Arizona, a sense of well-being overtakes you and makes you susceptible to the charm of Mexico.

Mazatlan itself is an historic port off the Gulf of California, on a peninsula overlooking Olas Altas (High Waves) Bay. The Bay, suitably named, is a gorgeous spot for swimming during the day. At night, the phosphorus-lighted breakers crash on the beaches, creating unforgettable memories of beauty. The town dates back to the early Spanish days and the conventions of ancient times prevail. The people still wear native costumes and quaint carriages take you down the cobblestone streets. The area, principally agrarian, is profuse with tropical flowers, coconut palms, bananas, mangoes and papaya.

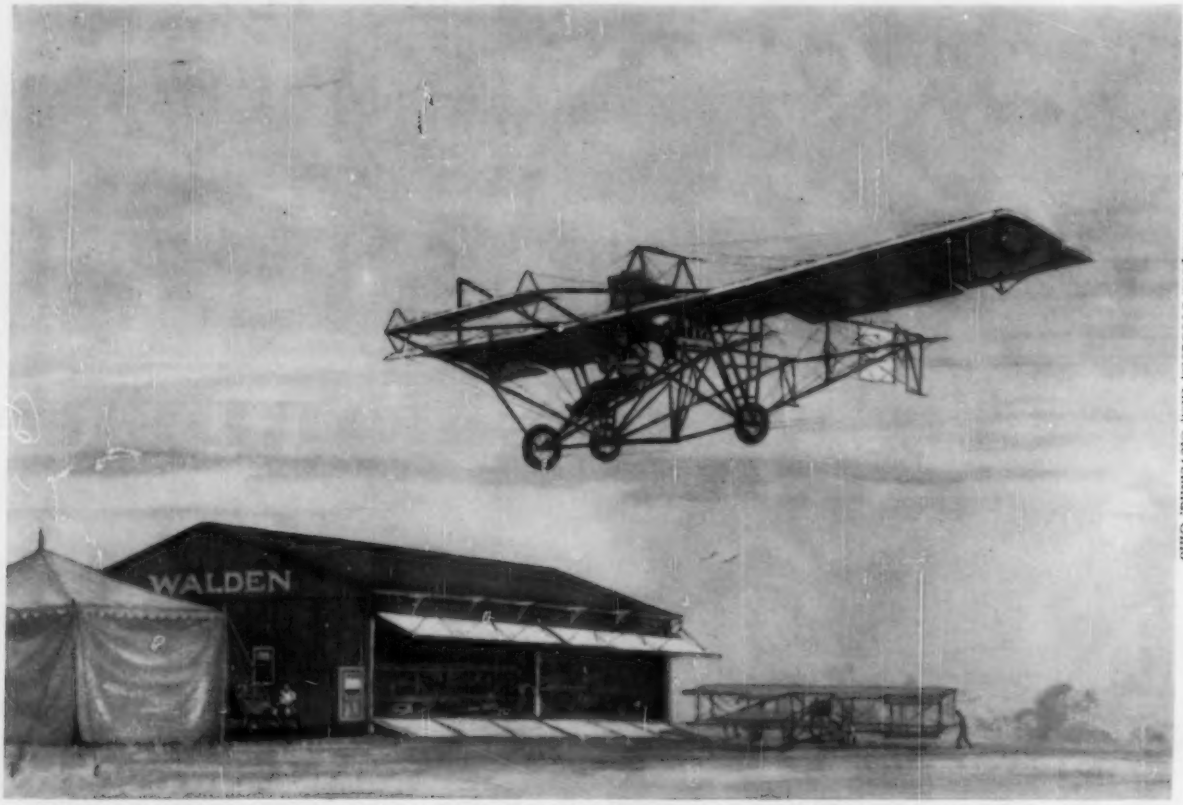
In the center of Mazatlan is a great church—in the Plaza Revolucion. There is a legend concerning the patron saint of Mazatlan found in the Basilica. On the Saint's day, the statue is carried in procession around the town by four virgins. Although the statue weighs about 100 pounds, only four virgins are needed to lift it. Each year, burly stevedores attempt the task but to no avail.

Like so many Mexican coastal towns, Mazatlan is famed for fishing and skin-diving. Many good fishing outfitters on the waterfront offer deluxe boats including tackle, bait, crew and refreshments for about four dollars a person for half a day. It is a land of leaping fish such as bass, rainbow trout, swordfish, dolphin, roosterfish and snook. If you bring your own equipment, they recommend a 30-pound test line for marlin and about the same or a shade lighter for sailfish and tarpon—for the other types of fish, just regular casting tackle. All around Mazatlan are amazing bays and inlets full of fish. For information about them, you check with the manager of your hotel.

On the waterfront you will see the world's second highest natural lighthouse, shrimp boats, and ships from the marlin fleet. Also, we noted hundreds of abandoned, incongruous cement blocks, some as large as a three-story house. We learned from our guide, Valentine (secured from the Mazatlan Guide Service, Phone Number 2) 23), that these were abandoned by engineers who had intended to use them in the construction of a modern breakwater many years ago; but they found the sand too soft to give traction to a crane large enough to lift them!

You can make local arrangements for hunting in Mazatlan but, because of the changing hunting requirements, it would be well to check with the nearest Mexican Consulate in the States about what guns you can take into the country. There are duck, quail, dove, pheasant; and a great assortment of clawed animals.

Best of all, there is plenty (*Continued on page* 64)



Illustration, courtesy of Thompson Products, Inc., Cleveland, Ohio

WALDEN IX was the first All-American monoplane, shown in flight at Mineola, L. I. in 1911. A model is on display at the Smithsonian Institution.

THE WALDEN STORY

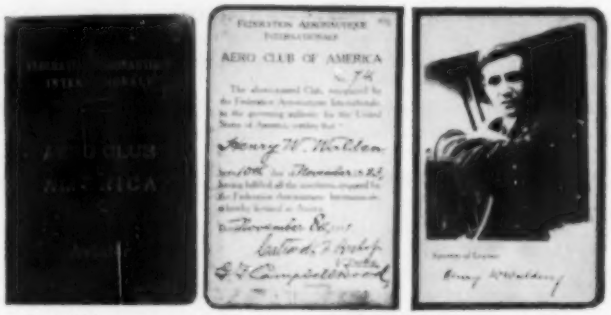
I built and flew AMERICA'S FIRST MONOPLANE

By DR. HENRY W. WALDEN

DECEMBER 9, 1909, is an unforgettable day in my life. On that day I lifted the first monoplane ever designed and built in the United States off the ground at Hempstead Field, Long Island. That the flight was also my solo attempt detracted nothing from the project.

It is almost impossible now to describe the motivation behind the handful of young men who haunted the air scenes of those days. Nationalism was at its height. Patriotism bubbled as young men looked out at the vast opportunities which revealed themselves on every hand. France, Germany and, in fact, numerous European nations had avidly seized on the possibilities of aviation. The United States had several outstanding figures but government was apathetic. Each of us, who had anything to do with the American effort, felt a heavy sense of responsibility. We were ambassadors of our country to the world of the air—or at least that's the way we felt, although we had no portfolio of office. Added to this consciousness was the mental excitement of originating and testing our ideas and theories. It was a great time for a young man to be alive and working on an aircraft.

The successful flight of the first American monoplane, the Walden III, was especially exciting because the prevailing trend of design was toward the biplane. I was brash enough to believe that this was an erroneous trend—that the future lay with the monoplane. I could not desert my convictions, so I had to buck the trend. This was far from being in an enviable position, as anyone who has had to swim against the current of popularity will assure you.



Dr. Walden was awarded F.A.I. License No. 74 on November 8, 1911.

To be truthful, that flight of December 9 was an unintentional sortie aloft, and it only lasted for some 300 feet and attained fence-post altitude. What I had intended to do was to test my engine with the plane tethered to the ground. I wanted to make records of the rpm at various engine temperatures and calculate propeller thrust. If I finished the engine data and had extra time, I had some thought of learning to taxi the plane. The last thought in my mind was a take-off.

On the basis of the engine evaluation test, my mechanic, Radu Tatu, a former Roumanian farmer with a bent for mechanics, had strapped a one-gallon oil can on the fuselage above the engine as a gravity feed fuel and lubricant device. The can was divided into two compartments, one containing the gasoline and the other the castor oil. We figured this would serve for our engine testing. Later we would mount a ten-gallon tank for actual flight. Tatu was a most ingenious fellow and my 23-year-old cousin, Henry Slater, was his willing helper.

It was a clear, cold dawn when we first tugged our design out of the rented ($7 per month) shed. The grayish white wing with its trailing tail surfaces, the vivid red struts, the aluminum-painted motor with its mahogany propeller and the chassis, with its glistening wires and nickel-plated wheels, made that newfangled monoplane a beautiful sight. It stood in odd contrast to the biplane contraptions.

We had no trouble starting the engine, but were greatly concerned with its terrific vibration at low speeds. It shook the plane and it shook my confidence. However, at high speeds, it had a fairly even bark. We used the propeller as the starting crank, and were mindful not to lose our heads, literally as well as figuratively. Swinging the prop was extremely dangerous because of the pusher-type construction, with the propeller whirling between the tail-supporting outriggers. However, we managed it without serious injury.

With the tail tied to a stake, Radu tuned the engine to idling speed and, as it warmed up, the vibration lessened somewhat. That's when I took my seat. I pushed the throttle full on to test the engine's rate of acceleration and suddenly found myself dashing across Hempstead Field. I tried to throttle back, but the throttle was stuck. I had no way to shut off the fuel or cut the electric circuit. My flimsy brakes meant nothing. The plane gained speed. With the control column firmly in hand, I kept the nose down to assure against leaving the ground and steered the entire length of the field—until the motor parkway loomed before me. Since I couldn't stop the engine, I set my rudder for a turn. Momentarily, my right wheel came off the ground as I veered to the left. Then I got straightened out on my back track and, retracing the meadow, found myself headed for the shed and making plenty of knots. It seemed a sure bet to make a clean sweep of shed, plane and all. Then, in the very face of disaster, the engine quit. It had run out of gas. I had learned a lot about taxiing in jigtime. When my knees stopped shaking, I figured the progress was worth the fright.

As we rolled the ship back to the tethering stake for more tests, I learned that Henry had inadvertently loosened the tie-down when he had been blinded by castor oil carried back in the prop wash. We equipped him with a raincoat, cap and goggles. Radu now shifted the electrical cut-off switch to the wheel so I could reach it and replaced a broken spring in the gas-control pedal. After the gas and oil "tank" was refilled, we were ready for another run.

My confidence had been bolstered. I taxied the length of the field under control and steered the ship in another U-turn. This time, I deliberately started back toward the shed at full throttle.

Then it happened. The plane took off. Unwittingly, I must have decreased the positive angle on the tail. Suddenly, I was flying—skimming a few feet above the ground—as easy as that. It was a wonderful sensation. All vibrations had disappeared. But there was that shed again, looming ahead of me. I cut the switch and throttle, pushed the tail control into positive angle and felt the wheels touch. Then I ground away at the feeble foot-brake and stopped with my nose almost in the shed door. Henry nearly fainted and Radu closed his eyes once more to avoid seeing the carnage.

Such was the first flight I ever made, and such was the first flight of the first American monoplane. History had another customer.

My elation was short-lived, however. As I was getting out of my seat, with the engine still idling, there came a bang, followed by a snapping noise. The engine quit. We found that the top cylinder had blown off into the propel-

ler, shearing off one of the blades at the hub. There wasn't a drop of castor oil in the tank. Although we had filled up with an equal quantity of gas and oil, the motor had used all the oil before it had exhausted the gas. Then it became overheated. We found that the crankshaft had been bent and the remaining two cylinders both scorched.

Although the first flight of the Walden III was unintentional, its design and construction was the result of almost 20 years of plans, study and dreams.

My first contact with the idea of flight was in Roumania in 1890. We were living in the northern town of Bottoschani where my father, a successful American highway and railroad builder, was engaged as a civil engineer.

During that early fall, colorful posters announced that the State Fair would feature the release of a mammoth, hot-air balloon, manned by a "dare-devil" who would make a parachute jump from "dizzy" heights. Flocks of villagers and country folk gazed in awe at the posters, showing the fearless balloonist as he dangled by his teeth from a trapeze hanging below the parachute—the balloon meantime floating off into the mystic sky.

I had seen pictures of balloons and parachutes in the States, so I too was excited at the prospect of the event. The spectators in the park were crowded around the huge canvas bag suspended from a rope strung between two poles, about 75 feet tall. As the spectacle was prepared, the large opening at the lower end of the balloon was pulled over a round, brick fireplace. A network of cords enveloped the upper portion of the bag and ended in individual lines attached to sandbags set in a circle around the fireplace. The sandbags kept the balloon from rising prematurely.

A haystack nearby supplied fuel. Soon, the bag shaped itself as it filled with smoke and hot air. A parachute was fastened by a large ring in its center to the network of cords anchored by the sandbags. A trapeze was hooked to the lower end of the parachute and the entire assembly was stretched out, ready to follow the balloon on its ascent.

NEW YORK AMERICAN, SUNDAY, JULY 2, 1911.

Walden Wins After Plucky Fight

Romantic Tale of Monoplane

Dr. Henry W. Walden and his aëroplane.

Not a leaf stirred when the balloon was released from its upper moorings. It swayed from side to side as a number of men stationed themselves at the sandbags, ready to unhook the moorings. The band struck up the national anthem as the plucky balloonist appeared. Slightly built, he stood before the crowd which took in every detail of his circus tights. Their metallic, silver texture sparkled the reflection of the sun. A wide row of medals was strung across the balloonist's chest. He stood smiling at the crowd, his dark, smooth-shaven, boyish face crowned with a shock of bushy hair. A strong belt around his waist was hooked by a rope to the trapeze, at each end of which fluttered a small flag.

As the balloonist completed a gracious bow and threw kisses in all directions, he raised the trapeze high above his head. At this signal, the gas bag was released. In a cloud of dense black smoke, the balloon rose slowly between its mooring poles. But a frantic cry from the crowd warned that the dare-devil already was in trouble. He became entangled in the cross ropes between the mooring poles as the balloon strained for release from his belt. The crowd roared in horror at the threat of their hero being torn in two. He had secured a hold on the pole with both his legs as he attempted frantically to reach the release cord. But the belt broke and freed the balloon which dashed victoriously into space. The pilot lost his struggle to retain a footlock on the pole. Groping into the air with outstretched arms and legs, he came tumbling to the ground.

With the crowd, I dashed closer to the scene. Loose hay somewhat eased his fall, but not enough to save him a lot of broken bones.

Another attempt was set for a few weeks later. The pilot had been engaged on a "no flight—no pay" basis. He had to make good a performance if he was to get enough money to leave the community.

He never did collect his pay. The ominous crowds which collected for the second ascension were convinced that he was a fake. They gathered in curiosity, tempered by anger at the prospect of postponement because of rain. Goaded by the rumblings of the crowd, the dare-devil took off in his balloon, weighted down with patches attesting to the last mishap, and the rain of the dreary sky.

With no bows this time, no kisses and no self-assured smiles, the balloonist cleared the poles which had caused his downfall several weeks before. But as it gained altitude, the weight of the moisture caused the balloon to sag. A sudden gust of wind swept the giant down and sideways into tall trees lining the field. After snapping through the tree tops, the balloon smashed against a nearby wall. The body of the pilot was left hanging limply from the trapeze as the balloon leaped upward again to perforate itself on the spire of the village church. Soon it settled slowly as the hot air dissipated through its torn sides. The body of the pilot collapsed lifeless on the doorstep of the sanctuary.

This experience with flight left a lasting impression. I thought perhaps man was not made to fly—yet. But ultimately—yes. And I would be in on it. Feverishly I began to make model balloons. They wouldn't fly. The weight of the tissue paper, wire hoop and paste was too much for the small-size bags. With a playmate, I built a larger model, ten feet high by seven feet in diameter. Our test flight was threatened when my mother confiscated the kerosene stove we had taken into the barn to provide a source of hot air. But we decided we could do without the stove. All we wanted was the heat, so we appropriated a wick, soaked it with kerosene and secured it in the mouth of the balloon by means of light cross-wires.

It worked. With lift to spare, the balloon drifted from its mooring and finally disappeared from view.

Flushed with the success of our first flight, we planned a pretentious event. A large poster announcing the "Great

Balloon Ascension" was pasted to the fence of our yard facing the street. We fashioned a still larger balloon with a tissue paper parachute to which we attached a dummy figure stuffed with crumpled tissue. From a distance, it appeared to be a man. Weighting it slightly to make the figure remain upright, we fastened the parachute to the balloon with lengths of light, cotton twine. These were to be ignited just before the ascension and were calculated to burn out in succession until the last one would release the parachute shortly after the balloon reached a considerable height.

Charge of admission was set at five bani—equivalent to one cent American. We expected a large crowd. On the appointed day, there were only five paid admissions. But our ticket seller was deluged by offers of payment in pen-points and buttons. We resisted the barter until time threatened to run out on our great event. We finally accepted an exchange of six new pen-points or 12 old ones, or 18 miscellaneous buttons for the admission price. We ended up with 20 paid admissions. Several score others peeped through the cracks in the fence. The policeman on the corner was an interested spectator, as were a few adults.

To the accompaniment of a beautiful, ebony hand organ borrowed from my indulgent mother, the kerosene-soaked wick was lit. The balloon inflated almost immediately and made a thrilling getaway to the appreciative cheers of the audience. The national anthem was ground out as the parachute released according to plan. It opened quickly and, as the dangling dummy started its descent, the balloon rose higher and higher, drifting with the wind until it disappeared among the stars of the gathering dusk, ending that thrilling day.

Flushed with victory, we determined to try it again the very next afternoon and were in process of a second show, when one of my colleagues dashed in and shouted breathlessly, "Run, run, the cops."

Forgetting all about the balloon, we ran for home. From our hiding place under one of the beds, we overheard the cause of the hue and cry. The flight of the day before had ended in a lumber yard about ten miles away. The landing of our flame-powered craft on a pile of dry lumber had been disastrous. The local papers made scare headlines of the case. The national press screamed of "Fires from the sky."

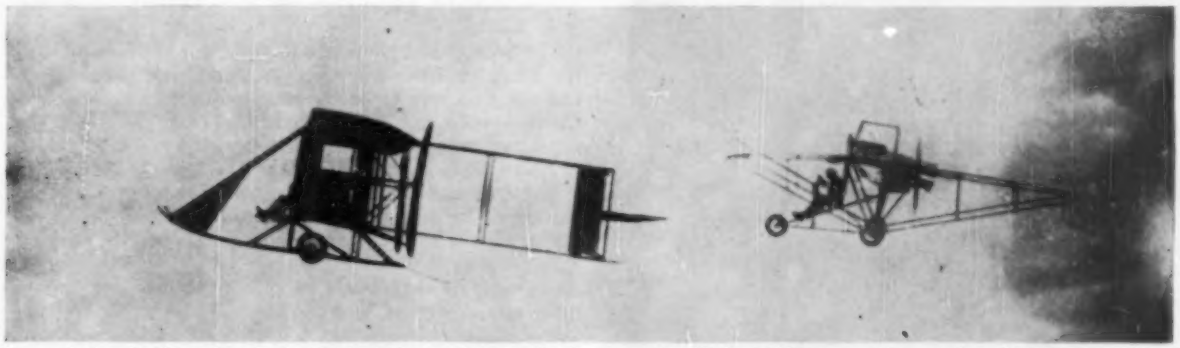
I had taken great pains to schedule the balloon flights during my father's absence. However, now he read all about it and, surprisingly, took great pride in my accomplishment and settled the lumber yard damage without a quiver. But for the future, balloons were taboo.

In 1898, Father completed his work abroad. Underestimated costs of his building contract resulted in the loss of a considerable fortune. Dejected and discouraged, he returned to the States. My mother, sister and I remained for a time in Vienna where mother sold her jewels of better days. I obtained a position with an American dentist who was in attendance to Emperor Franz Joseph.

During this period, aeronautics began to make real history. Solomon Auguste Andree had disappeared in his attempted flight to the North Pole; Clement Ader made several hops in his prop-driven "Avion"; two German scientists reached an altitude of 35,400 feet in a balloon; and Santos Dumont circled the Eifel Tower in Paris.

These events interested me immensely. Ever since my adventures with paper balloons, I had continued study on the mathematics of flying. But in spite of my interest in the scientific principles of mechanical flight, I was forced by circumstances and my mother's insistence to study also for my degree in dentistry. This was achieved in 1906, by which time we had returned to the States.

During the summer of 1908, I noted in the daily press that a group of aeronautic enthusiasts had formed the Aeronautic Society of New York. Organized to foster work on problems related to mechanical flight, the Society provided workshops, tools, assembling sheds and flying grounds for its members to test their theories. Even engines would be available for use of the members. The famous old Morris Park race track in the Bronx was leased as the Society's facility.



"I came in for a landing only to find a Wright biplane making its take-off run . . . I couldn't avoid his prop wash . . . I slipped into the ground . . ."

I found myself in good company. The Society had come into being when a faction of the Aero Club of America found a cold reception of their efforts to expand the program into more useful lines. The group comprised men interested in the sport of ballooning, but who also had ambitions to achieve practical flight. These dissidents broke away from the Aero Club and formed the Society, 40 members strong at the first meeting.

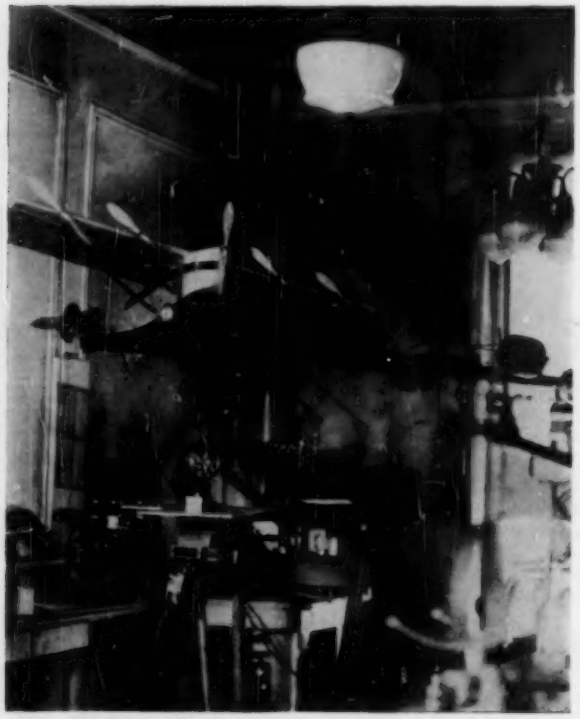
The Society began its activities in July 1908. I joined it in September. At first, I found the atmosphere confusing. Not being familiar with their technical language, I found it difficult to join in discussions. Morris Park, however, opened an entirely new world for me. My practical career began there. The workshops, the many variable designs, the race track and its infield where trials could be made, the small dirigible anchored on the plain, and the buzzing activity inspired me to action. The variety of contraptions included a biplane, very much like that of the Wright Brothers. There was a plane with three superimposed surfaces which the inventor called a triplane; another highly complicated affair which the inventor called a helicopter—it had 24, four-foot propellers overhead, driven by continuous belts; a bicycle with a propeller mounted on the rear sprocket; a bird-like air-beating machine called an ornithopter; and several varieties of gliders.

I understood that some of the machines had been tested,

but that none had left the ground. It was evident that new ideas were needed to get a machine into the air. Since I could find no scientific books which contained the basic information I badly needed, I haunted the facility at Morris Park. Here I learned the rudiments of flight.

I had already discarded the idea of playing with balloons. I felt that their bulk made them unsuitable for successful flight. Besides, I couldn't afford the luxury of experimenting with them. The comparative simplicity of what we called the flying machine appealed to me. To get started, I needed a basic idea. I learned that a cambered horizontal surface propelled through space at a certain angle could create a certain lift. Other attempted methods of securing lift in those days were obviously in error. Few of the "flying" machines actually got off the ground.

I readily understood that a successful flying machine



Dr. Walden continually tried new developments and improvements in the workshop which competed with his dental office in Manhattan.

had to be equipped for balance, directional stability and positive control of all the elements involved. These requirements were simple, definite and commonly known. As a result, I could not at that time understand why aviation had not made greater progress. It didn't take me long to find out. It was logical for me to assume that the conventionally-designed planes at the Park failed to fly because they lacked sufficient supporting surface. Accordingly, I planned a much larger wing area for my first design. But this area became so unwieldy that I divided the wing into two biplanes arranged in tandem, supporting equally the weight of the engine and that of the pilot, placed in the center section of the aircraft. To balance the plane laterally in flight, I tried a revolutionary idea which would operate fully automatically so that the pilot would be freed for other activity.

The engine was to be suspended by its crankshaft equipped with proper bearings from a fixed shaft, and geared to it by a sprocket chain. The 12-foot propeller, mounted high between the two biplanes, would be chain-driven from the overhead shaft. This left the engine to swing like a pendulum as it performed its tractor drive. Two surfaces, hinged laterally to the sides of the upper wings, were calculated to decrease the lifting area of the higher side of the plane in flight, by the pendulum action. The pilot would be seated directly over the engine, clearing the chain path by about ten inches. Since no engine was yet available, I calculated its weight at about 100 pounds.

The Walden I was almost completed when the engine purchased by the Society for use of its members finally arrived in the early months of 1909. To my consternation, it proved to be a 15 hp automobile engine weighing 500 pounds. The Walden I had to be scrapped! My consolation was that I had gained considerable experience in airplane construction, which would be used to advantage in the Walden II. Aside from its weight, the engine was a serious disappointment. I had expected it to develop 50 instead of 15 hp.

The Society had planned a public aeronautics exhibition for May 22, 1909. I wanted to participate with Glenn Curtiss, who was to be the principal attraction. Because Curtiss could not get his machine ready on time, the exhibition was postponed until May 29. I had the Walden II ready for its field tests weeks in advance of the exhibition and conducted my own trials in advance of the public showing. The curious who gathered at the track for my first trial run were apprehensive that starting my engine, suspended as it was from its crankshaft, would result in its turning in circles and chopping the machine to bits. They all ran for shelter when I prepared to crank it. Pulling on a heavy rope started it off with no trouble, however, just as I expected.

The Walden II taxied every morning up and down the race track with me at the controls. My legs were outstretched to within inches of the huge whirling propeller and its exposed driving chain. Having mastered the roadability of my design, I eventually dared to tug at the lifting levers when I thought I had flying speed. When nothing happened, I tugged a little more. Occasionally, either the front or the rear of the machine would rise a foot or so off the ground, quiver for a moment, and settle back.

By May 21, convinced that I could use the remaining week before the exhibition to improve my craft, I started work on expanding the wing area. I was convinced that a few added feet of surface was all my machine needed to leave the ground with all three wheels. I decided to add two running feet to each wing, making a total of 96 additional square feet. The night before the big event, we hauled our finished machine from its shed and left it in the moonlight, ready for its first flight.

Early the next morning, we fought through the crowds clamoring for admission, even though the exhibition was scheduled for 2 p.m. My walk across the field was with light steps, proud as I was in anticipating the day's event. But my enthusiasm was quickly dashed when I saw the debris of what had been months of planning and back-breaking labor. Familiar wings were hanging on the trees a short distance away. Parts were strewn across the track. The engine lay in a heap, still clinging to its overhead shaft among the slivers of the huge propeller. An early morning storm had exacted its price for my impatience at having everything ready for the exhibition. It was a heart-rending sight. But I quickly looked for the bright side. After all, I had learned a great deal. And perhaps I was merely on the threshold of what I was meant to do. The Walden II had actually flown; the added surfaces had

lifted it up in the storm.

My interest in aviation was now so absorbing that I engaged an elderly dentist to substitute for me at the office and limited my own professional services to patients who insisted on seeing me. I rented office space for my aviation activities and embarked upon a crystallization of my experience to date. I arrived at a number of definite conclusions.

- Superimposed surfaces like those in biplanes had to be avoided because of suspected aerodynamic interference between them.
- Their tandem arrangement was definitely out for the same reason.
- Automatic lateral control seemed desirable, but should not be dependent on a swinging engine; a rigidly mounted engine was unquestionably preferable.
- Freak-designs must be avoided.
- Lightest construction appropriate for the load each part had to carry was important.
- And, above all, a proper engine was essential.

Every requirement pointed to a machine with a single main supporting surface. There were two monoplanes at the Park, but neither had ever left the ground.

Before laying down the basic lines of a monoplane, a proper engine had to be found. I had no knowledge and no facilities to build one. The Wright brothers had had their own engine built. Curtiss had made motorcycles so the construction of a light engine was right in his line. But there were no other proven aeronautic engines available to me in the country.

It was my luck, however, that Yves De Villiers, newly arrived from Paris, visited the Aeronautic Society. He represented a French firm which was offering for sale an Italian-made, lightweight engine called the "Anzani." The engine was priced at $1,200 delivered in New York. This three-cylinder powerplant had already proved itself with Louis Bleriot, who had made the world's first cross-country airplane flight in France on October 31, 1908, over an 18-mile, closed-circuit course with only three landings. On July 25, 1909, Bleriot crossed the English Channel with a similar engine.

I was able to raise the down-payment for a promised delivery in three months. With the blueprints of the engine at hand, I started the job of designing the Walden III.

To determine the aerodynamic effects on lifting surfaces (there were none available that I knew of), I mounted a 12-inch propeller on a ¼ hp electric motor and arranged it to blow within a galvanized sheet-iron tube of the same diameter. I made my own airspeed meter as well as tension and weight measuring scales. By mounting various surfaces made to scale, I noted the effects at different speeds. These tests were far from accurate, but they gave me the basis for my design.

My "wind tunnel" tests spelled out for me the curvature of my wing and determined for me that the center of pressure would be at about one-third the distance from the leading edge. These were the most important basic features for my consideration. There being no way to determine the ultimate weight of the Walden III, nor a very accurate assumption of what weight she could carry per square foot of wing surface, I designed the wing so that additional panels would be added to its length if trial proved the need for greater lifting surface.

For automatic lateral balance, I developed an ear-shaped surface standing above each side of the wing. These "ear-flaps" were set at a dihedral angle held down in front by a properly tensioned spring. The effect was that the flaps were held to a negative angle in the normal line of flight. When the plane dipped laterally, the negative angle of the ear-flap on the appropriate side would automatically change to positive, increasing the lift on that side and restoring the wing to its level-flight position. The arrangement proved simple to construct and effective in performance.

One reason why I aimed for an automatic device was because the word at the time was that the only patent the Wrights could obtain covered the warping of a wing and turning the rudder to the opposite side at the same time, to balance the resistance caused by the warping of the wing. It was also rumored that the Wright patent could be interpreted to cover all manually operated lateral balancing devices.

The summer and early fall of 1909 provided hectic days of continuous doing and redoing. My two helpers, Tatu and Cousin Henry, worked for the love of it and little else. As a result, the no-labor cost of the Walden III was about $1,700.

The Walden III featured "ear flaps" which operated automatically to maintain lateral side balance.

When our engine finally arrived, it proved to be all we expected. It was one-quarter the weight and almost twice the horsepower of the Society's engine which had powered the ill-fated Walden II. It was air-cooled so that we had the advantage of lighter weight than the American water-cooled engines. There was no engine like it in the country. With the Anzani on hand, my work continued in earnest. Reports filtered to me that Bleriot, Alberto Santos-Dumont and Hubert Latham in France, and Hans Grade in Germany had made actual flights in monoplanes during 1909. The Bleriot, Demoiselle and Antoinette were originally-conceived monoplanes, and the Grade was a combination of the three. All were of the tractor type.

Other reports had it that a number of experimental monoplanes were being built in various parts of the United States. Some had actually been completed, but none ever left the ground under their own power. I rose to the challenge. My helpers and I worked until late at night. We gulped our meals while we worked. Sections of our plane had already been assembled in part, but the wing panels and controlling surfaces had to be doped and provisions for gas, oil and battery had to be made.

Due to limited space in the Morris Park workshop we could not assemble the machine (*Continued on page 58*)

On the wing of his Zanonia, Bob Brown of Denville, N. J., with crew chief, Ray Wodell, traces the course of proposed cross-country flight.

George E. Coder, Jr. of Arlington, Tex., prepares for a flight in his Weihe sailplane, while a youthful crew member holds the ship's canopy.

The sleek sailplane is a Prue 215A with last year's champion, Lyle Maxey, reclining at controls. Designer Irving Prue of Lockheed is standing by.

Bundled up against the cool breezes of a cold front are Mr. and Mrs. Bob Smith of Bay Shore, N. Y. Smith came in sixth, flying an LK-10A.

AIRMAN'S ALBUM

Soaring Meet

FROM FLORIDA, California, Texas, the East and the Middlewest, glider-laden trailers wound their way this summer to Elmira, N. Y., bound for the 24th National Soaring Contest. To the 31 soaring pilots and their crews this was the most important event of the year, as it not only meant pitting one's skill against the best soaring talent in the country, but it was also an opportunity to meet old friends, renew acquaintances and engage in social activities and "hangar flying" sessions that hallmark these meets.

Weather, which can turn a soaring contest from success to failure, was in a cooperative mood this year. Strong thermals, due to passage of cold fronts, led to several long-distance flights. On one day, seven pilots averaged 210 miles each, and two achieved goals of over 300 miles. When the meet closed and final scores were totaled up, Stanley Smith of Woodland Hills, Calif. was proclaimed National Soaring Champion, a title he had won before, back in 1933.

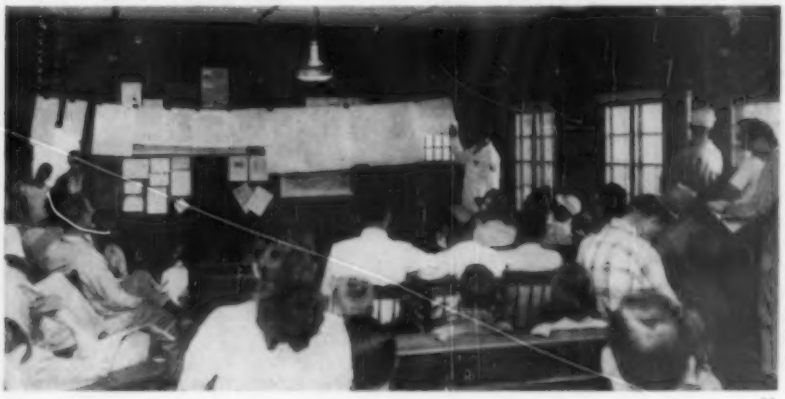
Sailplanes lined up for daily flights according to sequence. In foreground, German LO-150, flown by Harold Jensen of Forest Park, Ill.

Harris Hill, scene of the contest, is the best-equipped soaring site in the world, attracting many spectators during the National events.

Emil Lehecka, L. I. City, N. Y., in the cockpit, and Ed Seymour, Rochester, N. Y., by the nose, tied for FLYING magazine spot landing prize.

Maj. William Fuchs, secretary of the Soaring Society, speaks at the awards banquet. Seated, right, is Lt. Col. Floyd Sweet, past president.

Below: Pilots meetings were held every morning before take-off. Here, contest meteorologist Bernard Wiggins, briefs participants on weather from which task of the day is determined.



Radar Advisory Service Chart as it appears in "The Airman's Guide."

Cross-country flight by lightplane is safer and simpler with weather radar.

Private Pilot on Radar

By WILLIAM M. MINAR

APRIL SHOWERS may bring May flowers to most of the country but in Texas, like everything else, we probably get them bigger and better. On the Gulf coast, we have sound effects, too, with thunderstorms that the weatherman calmly terms "air-mass stuff."

Whenever I hear the term, I know I have to be on the lookout. But on one short flight I learned about another lookout that can save private pilots a lot of time and worry—weather radar.

My wife and I were planning a short business trip from Andrau Air Park, 15 miles west of Houston, to Galveston Municipal airport, 54 miles away. Why fly this short distance? Well, it's short in miles, but driving traverses the downtown traffic of two cities and the return trip that afternoon would be through the five o'clock rush. What would be a 2½ hour fight through dangerous traffic could be a pleasant 32-minute flight in our Cessna 140, N72653.

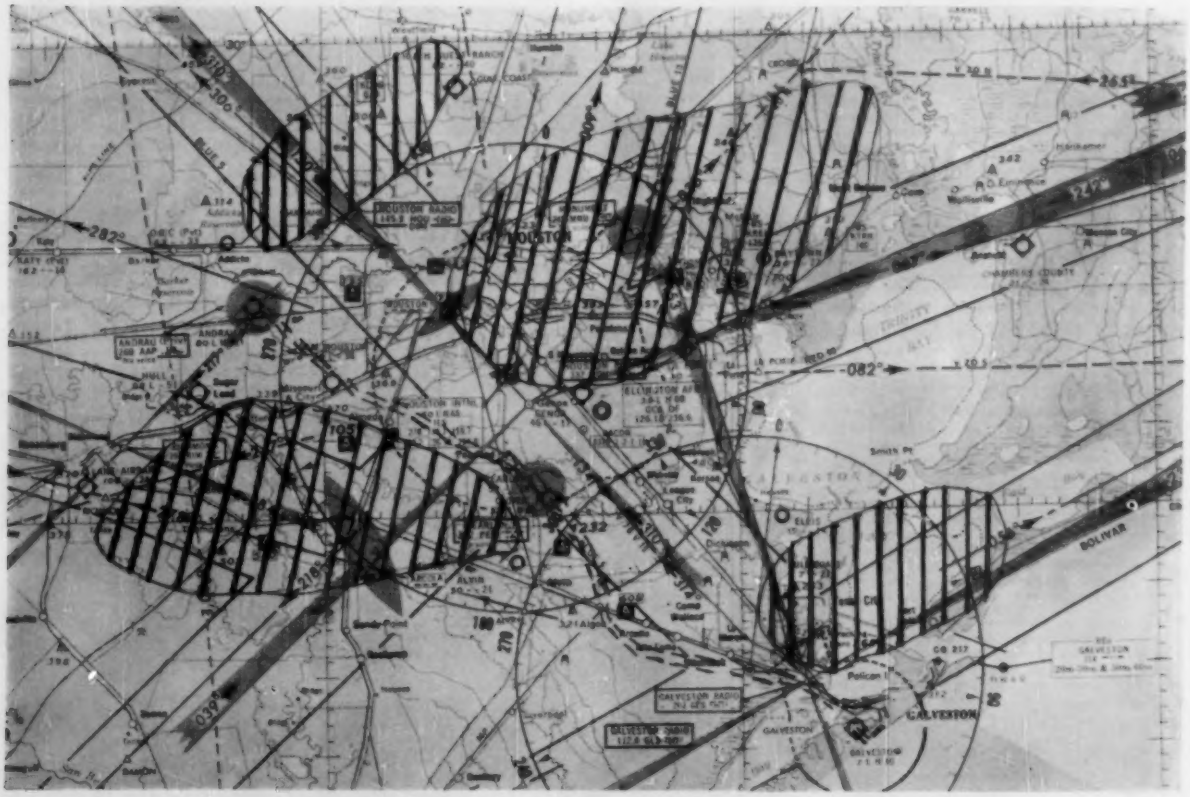
Our flight down was easy, with light, scattered cumulus at 2,300 MSL gradually lowering to 1,800 as we approached the humid coastline. Galveston omni provided an easy navigation guide and we made good our CAA flight plan ETA of 12:05.

At four o'clock, the rains came. The lowering sky and gusty winds threatened to weather us in only a few miles from home.

Assuming the CB's (cumulo-nimbus) were active all over the coast, I was slightly disgusted when I call the Galveston Aerological Station.

"How's Houston and Andrau Air Park?"

"It doesn't look too good," the weatherman said, "A Trans Texas Airliner just landed after an IFR plan from Houston International and he was in the soup all the way at 1,800 feet. But our weather radar shows some well-defined cells up that way. Why (*Continued on page 79*)



Portion of the San Antonio Sectional map, showing the author's flight path (indicated by double broken lines) between four thunderstorms.

FLIGHT to ETERNITY

Even the heart of a scoffer cannot help but go out, if but for a moment, to one who is about to plunge into the unknown.

By MATTHEW J. BRUCCOLI

MOST OF THE appurtenances of Science-Fiction were present. Even the desolation of the area, the arid stillness emphasized by the occasional cries of the sea birds, was appropriate. The pungent odor of a little-known, volatile explosive pervaded the site, a strange odor with which only a few people had as yet acquired any familiarity, though even this would some day come. This explosive was to propel the machine somehow, lending an additional element of danger to a project already so fantastic that sober persons, not inclined to laugh at the idea, even saw something of the blasphemous in it.

The machine itself was a mighty one, to be sure, and of infinite complexity. A few had seen it from close up, and all agreed that, if nothing else, it was too ponderous a mass to be lifted into the sky—but these were sceptics, and it is man's good fortune that there will always be eccentric souls to spice the course of progress in spite of them.

But even the cynics were constrained to give credit where it was due. The structure, manifestly of immense strength in spite of a certain delicateness in its design, perhaps as a sturdy timepiece is delicate, was evidence of the incredible ingenuity of madmen.

The gulls took flight, screaming, as the machine, responding to the mystical manipulations of its builders, exploded into such an ear-shattering roar as was seldom heard by mortal men. The onlookers, already infected with the kind of excitement that is bound to be a part of any occult ritual, now felt the apprehensive thrill that a witness might feel at an execution. Even the heart of a scoffer cannot help but go out, if but for the moment, to the individual who is about to plunge into the unknown. The man was a lion heart indeed, who now calmly took his position in the device.

Space travel has always been and will always be a part of men's dreams so long as they have souls to lift them above the level of the brute; and men will inevitably sacrifice their lives to enact their dreams. Since the Earth has shrunk as it has since Magellan, our instinct to burrow into the unknown has only one direction left to tantalize it, and that was the direction in which these visionaries looked—upward toward the sky.

He may have been a scientist of the calmest, most analytical order, but surely no less susceptible to the excitement of danger—the breathtaking anticipation of this venture into space. Even with all the factors methodically predetermined, his must be only the outer appearance of coolness as he prepares to step where no man has stepped before in the history of the world. In this moment he is a figure of such lonely dedication as only a poet would be qualified to describe.

Yet the awesome connotations of the project in no way lessened that air of self-assurance, as he nodded a signal and slipped the release . . .

The journey was begun. The machine moved slowly at first—but nothing is so relative as Time or Motion and a shooting star moved not more swiftly as the machine snapped its earthly bonds. Even such weight as this was consumed to nothingness by the more urgent force of speed.

If the well-wishers on the ground cheered him on his way, he heard nothing, for he was enveloped in a solid, deafening mass of thunder.

Tradition and (*Continued on page 76*)

Ernie Gibson, operator of Chelan Airways, cooks lunch over a campfire near his tent on Trapper Lake while Al Peterson looks on and Lee Smith exhibits his morning's catch. Not bad for an hour and a half.

Above: Gordon Stuart, proprietor of Emerald Camp on Domke Lake, and his dog, Rupert, board Chelan Airways plane to return to his resort.

Below: While the fishermen are out, Ernie Gibson checks and cleans up campsite on Trapper Lake.

Trapper Lake

By BOB and IRA SPRING

GETTING AWAY from it all is easy when fishing in a remote mountain lake with no trails leading to it has an appeal as a fly-in getaway place.

Located at 4,300 feet near the headwaters of the Steheken River in Washington is Trapper Lake, where a fully-equipped fishing camp is maintained by Chelan Airways.

About 150 fishermen are flown in every season. And though accommodations are primitive (campfire cooking and sleeping on fir bough beds), most guests remain overnight.

No flights are scheduled to this primitive paradise. Chelan Airways flies the run as passengers appear at their parked line of two Aeroncas, one Super Cub and a Cessna 180 at their Chelan, Wash., headquarters, operated by Ernie Gibson. After learning to fly in 1939, he started commercial flying in 1944 as an instructor at a Navy primary flight school.

In addition to providing the getaway planes for eager Izaak Waltons, Chelan performs other transport services in the north-central Washington area, including emergency evacuations.

And just to prove that the beauty of the Lake can trap everyone who sees it, even the Chelan Airways pilots have been known to drop a line between flights. END

Ernie Gibson lands Cessna 180 on Trapper Lake. Glacier descends from 7,200-foot Hurry Up Mountain. To the right is 7,600-foot Magic Mountain.

Trapper Lake lies like a jewel in the northern Cascade Mountains.

Gibson and Ray Christensen roll Cessna 180 out of Chelan Airways hanger.

Temperature and humidity can cause havoc in your airplane's carburetor, so beware of

Invisible Ice

By TED DUROSKO

FLYING DURING THE WINTER season offers some advantages over that of summer. Probably the main one is stable air. This connotes smoother rides at lower altitudes where lightplanes usually fly. It also means more opportunity to fly dead-reckoning problems with greater accuracy. The magnetic compass does not bob and swing as it does in summer turbulence. And quieter atmospheric conditions usually exist for good reception of low frequency radio ranges and broadcast stations, thus affording an excellent opportunity to fly an extended cross-country via radio navigation.

Then too, denser, cooler air allows more efficient propeller operation. As a result, the airplane gets off in a shorter distance, climbs with a more positive speed, and cruises faster.

However, there is a catch to winter flying. It is the threat of "invisible ice," or carburetor ice forming internally and, if undetected, building up to a point where it will choke out the life of an aircraft engine. The ice can form while idling the engine on the ground, taxiing, during the take-off and climb, at cruise, or when in a landing glide.

The problem of carburetor ice also exists under summer conditions in some instances, but it is more troublesome when cooler temperatures prevail.

Take, for instance, the case of a former military pilot who flew in the Korean War. One afternoon he decided to rent an Aeronca Champion on skis. The ground was covered with about four inches of soft snow—the free air temperature was 33 degrees F. and the sun was shining through a scattered cloud cover. The airman taxied to take-off position, checked mags and oil temperature and headed the Aeronca down the runway.

During the take-off the engine behaved normally, the pilot reported. Upon gaining 400 feet and shortly after the first left turn, it began to lose rpm's slowly. To compensate, the pilot had to advance the throttle. Soon it was wide open but the 65 hp Continental engine was turning up only 1,900 rpm. Making a gentle turn, the pilot then decided to head back for the field.

By now the engine speed was down to 1,700 rpm. It would cough, backfire and regain a few hundred rpm for approximately 30 seconds and then fall off again. As the airplane reached the edge of the field, the engine shuddered and stopped dead.

Fortunately, there was approximately 300 feet of altitude left and the Aeronca made the runway.

When the mechanic told the pilot it was carburetor ice, he exclaimed, "Carburetor ice! Why I was in flight only a few minutes and I certainly wasn't flying through any clouds."

Well, apparently the former military pilot forgot several important facts. First, that carburetor ice can start to build up as soon as the engine is started; second, when there is moisture in the air, it can be found at most any altitude; and third, he was not flying an airplane with an automatic carburetor air heater or alcohol deicing equipment.

The main purpose of a carburetor is to change gasoline from a liquid to a gaseous state and mix it in proper proportion with air in order to provide a metered, combustible mixture for the cylinders. The process involves evaporation of the fuel. In float-type carburetors, standard equipment on all lightplanes powered by engines of less than 150 hp, evaporation occurs above the butterfly valve in the narrowest part of the venturi, and is accompanied by a sharp drop in temperature, a normal process when volatile liquids evaporate. Average drop in venturi is approximately 40 degrees F., which means that in fall and winter the temperature within the carburetor is almost always below freezing.

With such low temperatures existing at this point in the throat, any moisture in the incoming air will condense immediately and ice will begin to build up on and around the butterfly valve. If a sufficient amount of ice is allowed to form, it will clog the throat and stop the fuel supply.

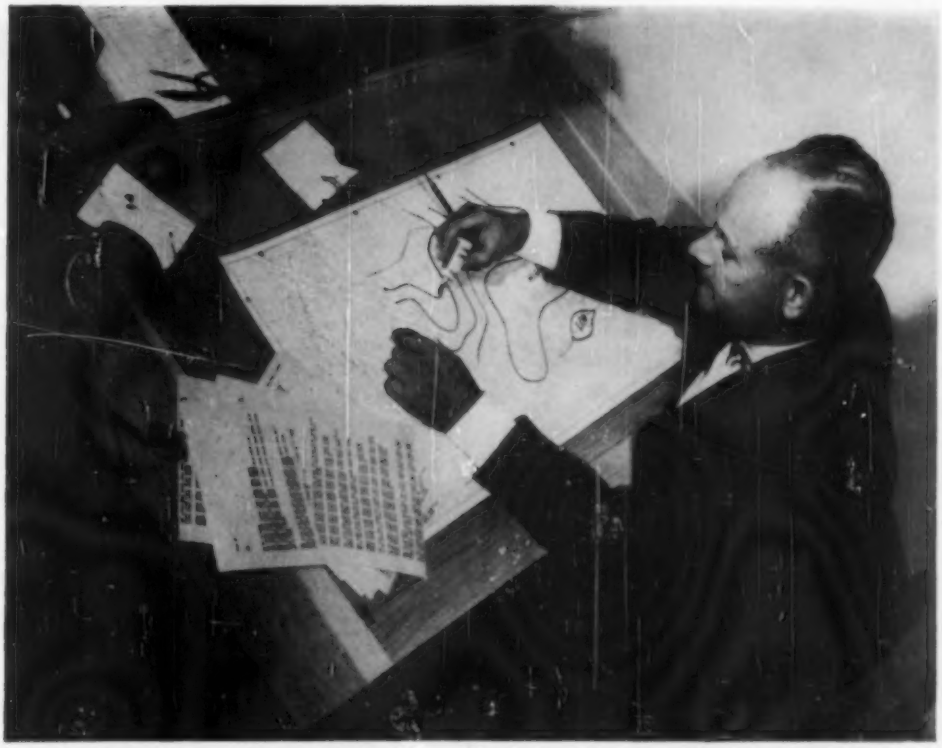
With certain moisture and temperature conditions, ice can build up on the butterfly valve and also in the induction system.

However, the effects of carburetor ice can be minimized if the pilot is ice conscious and takes the proper precautions. Here are a few tips on how to cope with this problem:

How to recognize the symptoms—Probably the best way to detect carburetor icing in a lightplane with a fixed-pitch prop is by observing the tachometer. As ice forms in the carburetor and induction system, there will be a gradual loss of rpm. This will be noted without any change having been made in the throttle position or in the flight attitude. Under most conditions the formation of ice is a progressive one, therefore a pilot not on his guard might advance the throttle gradually to maintain constant rpm without realizing that carburetor ice is forming.

Another indication is a rough-running engine. This symptom also is one to develop progressively. At first there is just a slight vibration and, as the ice forms, the roughness becomes more pronounced.

If the pilot still has not recognized the symptoms, the engine usually will try once more to awaken the pilot before giving up the ghost. On top of the loss of rpm and roughness, the engine will snort, (*Continued on page* 72)



Forecaster Norman Lacey of National Weather Forecasting Corp., inking in the isobars on a surface weather chart.

There is a definite need for specialized, dependable, flying

WEATHER BY SUBSCRIPTION

By DARIO POLITELLA

QUICK AND ACCURATE weather information specially prepared for private and business aircraft operators is the stock-in-trade of the newly-formed National Weather Forecasting Corp., located at Newark, N. J., Airport.

This "weather by subscription" service was organized last summer to meet the growing needs of more than 40,000 operators across the country who demand accurate, easy-to-get forecasting and weather flight plans.

A subscriber to NWFS learns the features of the current weather chart, perhaps as a preliminary briefing to a flight planned 24-36 hours ahead.

During their first two months of operation, NWF pilot-meteorologists accumulated a clientele of more than 15 companies having about 50 pilots. During this short period, too, NWF claimed a record "89 per cent accuracy 98 per cent of the time in a 24-hour period."

Here is how National Weather works.

When a client buys his subscription, NWF records an array of facts about the user. This information is filed in a card index system which makes readily available such data as the user's type of aircraft, range, airspeed, deicing equipment, pilot's ratings, hours and miles of flight averaged per month, and radar proficiency.

Such data is used to interpret weather and to offer flight plan advice to the individual subscriber. Calls for service never encounter a "busy" signal, since the user identifies himself by a code number. The forecaster on duty refers to the client's data card and when the destination is known, the pilot is given a specially interpreted weather forecast and flight plan recommendation. Surface weather maps are read to the pilot who records the information for use on the flight, as well as to gain complete understanding of weather conditions.

NWF offers two types of service. For the occasional user, an "on-the-spot" forecast is available at any hour of the day. The subscription service, for companies using more than one airplane or the client who needs five or more briefings a month, in- (*Continued on page 85*)

THE BOY

One of the 49 specially selected CAP cadets attending the 1957 Jet Orientation Course climbs into a T-33 for first jet flight.

TEENAGERS FLYING the T-bird at Perrin AFB, Tex., took to jet flying as ducks to their proverbial habitat, Air Force officials there are convinced.

At the home of the 3555th Combat Crew Training Wing, a flock of CAP cadets, culled as the "cream" of more than 36,000, gathered at Perrin from 46 states, the District of Columbia and Alaska last summer. In a week-long course, this group of typical American teenagers was plunged into indoctrination sessions in jet-flying, the way the Air Force does it with its post-teenage pilots.

The invitation to the CAP cadets was restricted to those who met the physical and mental requirements of USAF Aviation Cadet training. The objective was a regular incentive program for the cadets, something for them to work toward; and an attempt to dispel any notions they might have formed that jet flying is only for supermen.

Upon reporting to the base, the young men were given semi-private quarters befitting their status as "potential pilot material" and were extended the privileges of the Officers' Field Ration Mess and Officers' swimming pool. Here, however, the relaxed atmosphere ended.

Beginning Monday morning, the cadets plunged into a 6:00 a.m. to 6:00 p.m. schedule that left them little time for anything but study. For two days, they attended ground school as intensive as anything they had ever experienced—aircraft control, T-33 engineering, canopy, seat and bail-out, physiological training, weather, flight instruments, navigation aids and approaches, and the fitting of flight equipment.

"Gentlemen," a grizzled Air Force tech sergeant told them, "jet flying isn't dangerous—not any more dangerous than driving a hot rod 80 miles an hour down an open highway. In fact, it's a darned sight safer because here

CAP Cadet Don Sanders of Renton, Wash., sees how he will appear on his first jet flight.

By FRANK BURNHAM

and THE JET

An incentive program on jet flying for Civil Air Patrol cadets scores a great success.

we train you to meet any emergency that may occur. When you're moving at high speed in any sort of vehicle, things happen in a split second. We want you to be prepared to meet any eventuality in the same split second.

"If something should happen, and it isn't likely that it will, you shouldn't have to take time to think about what to do. Your actions should be second-nature to you."

The sergeant went over the ejection procedure and the bail-out technique. The cadets listened attentively. Their expressions indicated concentration, interest and even amazement but never fear. It was just like the time Pop began teaching them to drive the family car. There was no mystery about it, just a matter of training.

In all, the youthful jet trainees received 15 classroom hours of academic instruction, followed up by 19 hours of flying training. In addition to five hours of actual jet flight, this portion of the course included briefing, preflight, post-flight, ground-controlled intercept, an introduction to the C-11 synthetic instrument trainer and actual instrument instruction in the C-11.

When it came to the real flying, the cadets found that this was no "token" orientation. The boys flew the T-bird. Sixteen of them had had civilian flight training and all of them had made frequent orientation flights as a part of their CAP training. All of them found that a few minutes of familiarization gave them the feel of the T-33.

The flying sessions included one hour, 40 minutes each of day transition, instrument flights and cross-country, preceded by two hours of pre-flight checks, check lists, starts, system operation, throttle technique and shut-down procedures.

Indicative of the comprehensive scope of the course is the outline for the day transition mission. Included in the mission were radio procedures, take-off, climb and dive (trim technique), turns, loop, wing rolls, local area, a GCA approach and landings.

The instrument mission, which followed the simulated instrument flight in the C-11 synthetic trainer, included an instrument cockpit check, instrument take-off, trim control, pitch control, bank control, tower control (change of airspeed), turns (to a heading), radio range orientation and a radio range penetration and GCA.

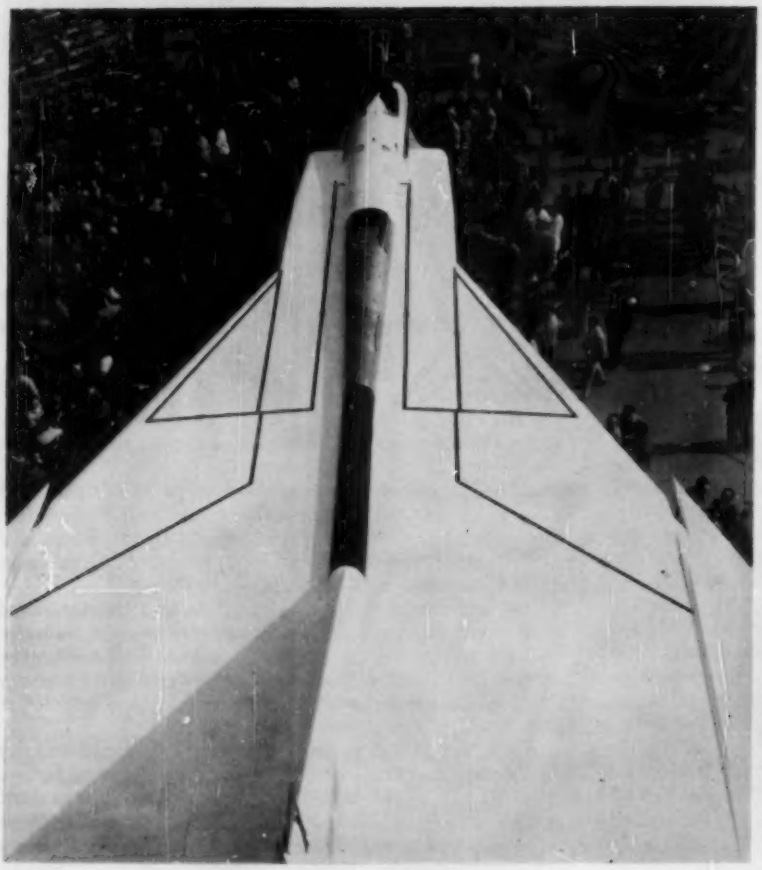
A half day of flight planning preceded the cross-country mission. The cadets plotted their own courses and figured their ETAs. On the flights they were required to perform the navigation in addition to doing as much of the flying as their training would permit. From Perrin to Oklahoma City, they flew by pilotage. From Oke City to Wichita Falls, they flew by dead reckoning, with a position and steer from GCI. On the leg from Wichita Falls to Fort Worth, they used the ADF with a DF steer from Perrin Tower. An ADF penetration and ILS landing at Perrin completed the mission.

Under the direction of Maj. James W. Scolman and Capt. Rex Hoopes, who had also planned the course, the youngsters learned that flying in the jet age is no superman job.

The cadets had proved it and liked it. As Cadet Capt. Jimmy Williams of Tulsa said it: "Boy, I could stay here all year!"

END

CAP Cadets Walter R. Krake of St. Louis Park, Minn., and James Altman of Florence, S. C., watch USAF Lt. Norman Schapp check out in the F-86 Simulator at Perrin AFB, Texas.



AVRO ARROW Largest interceptor in the world and, undoubtedly, the most powerful, the Canadian-designed-and-built Avro CF-105 Arrow's mission is primarily long range interception of enemy bombers. With a ceiling close to 70,000 feet and a speed in excess of Mach 2, it has a gross weight of 60,000 lbs. and, when in production, will be powered by two Orenda "Iroquois" engines which, with afterburners, are rated at 30,000 lbs. thrust each. Photo on the left shows the large size of the aircraft, its arrow shape and the wedge-type leading edge extensions which improve the air flow at wing tips. Other aerodynamic features are conical cambered leading edge, and blunt trailing edge. To improve engine performance at high supersonic speeds, large fixed ramps are provided at the air inlets. Photo below: Gaps between ramps and fuselage create oblique shock waves in front of inlet which slow the air and raise its pressure. Wing span is 50 feet.

GRUMMAN MOHAWK High performance tactical observation plane powered by two Lycoming T53 turboprop engines of 1,005 shaft horsepower each. Designed to operate from small, unprepared fields, in snow and mud, it will go into service with the U. S. Army as AO-1, and with the Marine Corps as OF-1. Crew will consist of pilot and observer seated in the "maximum visibility" cockpit equipped with bubble canopy. Simultaneous snow and water operations will be possible by providing the Mohawk with special ski gear. Props are full feathering, reversible. Wing span is 42 feet.

TRI-PACER 160 The 1958 version of the popular Piper Tri-Pacer is powered by a 160 hp Lycoming 0-320-B engine which gives it a cruising speed of 134 mph at 7,000 feet, using 75 per cent power. Range with standard fuel capacity of 36 gallons is 536 miles, and over 650 miles with addition of optional eight-gallon tank. Exterior design combines Dayton White wings and fuselage top with choice of Bahama Blue, Santa Fe Red or Hershey Brown trim.

EXECUTIVE HELICOPTER Above: Latest thing in business transportation is the executive version of the Vertol 44 derived from the military H-21 helicopter. Luxurious cabin appointments (photo above) include wall-to-wall carpeting, soundproofing and hand-painted murals. Capacity is ten passengers.

HAVE YOU SEEN?

THE RED MILL Right: Designed by Soviet's famous helicopter expert, Michael Mil, the large twin turbine-powered Mi-6 is claimed by the Reds to have established a new altitude and weight-lifting world's record last October by reaching an altitude of 7,500 feet carrying a commercial load of more than 24,000 lbs. Size of the helicopter can be judged from comparison with people at the tail. Jet tail pipe is angled to prevent gases from hitting tail rotor.

Small planes now can enjoy reliable two-way radio at low cost.

VHF for LIGHTPLANES

By SIDNEY P. HELD

Chief Engineer, Nova-Tech, Inc.

Checking the Nova-Tech TR-102 VHF two-way radio installed in an Ercoupe.

I PRESSED the push-to-talk button on the mike and, trying to control the excitement in my voice, called, "Santa Monica Tower, this is Ercoupe 372. How do you read?"

The answer came back immediately, "Loud and clear, Ercoupe 372. What is your position?"

"My position is 4,000 feet, ten miles east of Ontario. I just wanted a radio check. Thanks a lot."

There were 60 miles between us. My flight test report read: "Raised Santa Monica Tower; distance, 60 miles; loud and clear."

The radio performed exactly as I had expected and represented a solution to a difficult design problem. The problem was this: "Design a two-way VHF radio for lightplanes. Keep the price below $200."

I think I know what most small plane owners are up against. There is never a question of the desirability of radio in an inexpensive plane; it is always a question of price. I feel that $200 is an upper limit for thousands of airplane owners. Even though the low-frequency towers and ranges are being eliminated, and the CAA has already designated many zones where two-way radio is mandatory, the small plane owner still faces a cost problem.

In the design of the TR-102, necessity was certainly the mother of invention. It actually did take an invention to solve the design problem. The conventional two-way radio has two sets of tubes—one to receive and one to transmit. My invention consists of a method of accomplishing the same results with only one set of tubes. The one set functions either as a receiver or as a transmitter, depending on what the pilot wants to do. If he wishes to transmit, he presses the mike button, whereupon a relay connects the tubes to the transmitting circuits. When he's through talking and releases the button, the tubes go back to the receiving circuits. Thus, without reducing performance, I was able to eliminate half the tubes and parts in the set! I have a patent pending on this circuit which, I think, could very well represent a technical break-through in the field of low cost, two-way radio.

Lightplane owners also have other problems which we had to solve. A good radio installation requires a completely shielded ignition system. The static otherwise is unbearable. To install a shielded ignition system on a lightplane can run as high as $150, so I designed internal circuits which absorb spark plug noise to such an extent that pilots are spared expensive installation charges. Although this filtering of interference added to the costs, we were able to save money by eliminating a cabin speaker and amplifier. The TR-102 operates with headsets only.

However, most of the planes for which our equipment is designed are too noisy for cabin speaker operation; so again, we were able to reduce costs without reducing performance.

The original TR-102 design featured a ten-channel transmitter which I thought was adequate. But the CAA announced that a minimum of nine channels is required for adequate coverage and, therefore, we increased our coverage to 23 channels.

Additionally, we have some very nice features designed into the TR-102. For instance, when a pilot wants to transmit on the emergency channel, he is generally in a hurry, so we placed the Emergency (*Continued on page* 84)

Don and Jan Ross staking a uranium claim on Prince of Wales Island, off Ketchikan, Alaska.

Prospecting with a Cub on floats, this young couple made a fabulous

Uranium catch off Ketchikan

By EDWIN D. MERRY

AS DON ROSS TAXIED out past the last of the fishing boats in Ketchikan harbor, Jan, his bride of an excitingly short time, leaned forward to exclaim, "Wouldn't it be wonderful if we could make a strike today!"

"Sure would." Ross twisted around to grin at her, wedged in the rear seat among prospecting equipment and with the newly-purchased nucliometer tightly held on her knees. "But," he reminded, "this is not a regular survey flight. We're just going out to test the gadget."

The floats hopped off the long Pacific rollers and Ross headed toward the coast 40 miles southeast of Ketchikan. It was May 18, 1955. The pilot was one of three partners who had formed the prospecting company, "Uranium 55." The company did not believe predictions that radioactive minerals in commercial quantities were unlikely to be found in the area.

Partners, Don Ross, Kelly Adams and William Easton were determined to survey the southeast coastal region of Alaska, known as the "banana belt" because of its mild climate. The three Ketchikaners felt uranium was likely to be found in any area that produced other minerals; and nearby Prince of Wales Island had yielded both gold and copper.

Uranium 55 got rolling in the spring of '55 with a float-equipped J-3 Cub and a nucliometer. A $6,000 investment, they decided, would take them through one season. After that—well, a prospector lives his days as he faces them.

Kelly Adams was the syndicate's anchor man. He, like many of the rocks he studied, was a kind of conglomerate —pilot, geologist, aircraft mechanic, prospector.

Ross, with 8,000 hours, was the "flyingest" member of the threesome. They decided he would be the best man to devote full time to the operation. The flying prospector would have to circle low over the bony ridges and prod deep into the forested valleys, contending with sudden storms and tricky winds on the Inside Passage.

This particular morning Ross and his bride cruised toward Prince of Wales Island. It was his third Spring flight to the island but his first with the nucliometer.

The plan of the day was to crisscross the ridges for the duration of the fuel range and then let the onshore wind blow the yellow Cub back into Ketchikan harbor.

The thermals began to roughen over the hills. Don raised his hand and made the gesture of turning a switch. Jan repeated the gesture, and the nucliometer came to life. At once there was a high background count. The Cub was 200 feet above the north shoulder of Bokan Mountain. Thinking there might be something wrong with the instrument, Ross swung off over the spruce-covered lower slopes. At once the needle returned to its unstimulated position.

For more than one hour, Ross and his wife flew in and out of the invisible radiation fingers making up from the mountain. Every time the plane dragged that north slope the nucliometer came to life, but finally Don pointed to the lowering gas gauge and shouted back to his bride, "We've got to head back. I'll bring Kelly out tomorrow. This calls for a geologist."

Mrs. Ross had something to say to that, her eyes round with excitement. "You can fly him out, but don't you land. I want to be with you and help stake out the claim. Promise you won't go in there without me."

Don promised and pointed the Cub's nose back toward the cliff-clutching city that rises from the acres of wharves.

The following day, with Adams aboard, Ross again located the "hot spot." The nucliometer needle jumped clear off the dial. Even at the least sensitive setting, the instrument indicated a maximum deflection. Now the problem was to find a place to land. The barren folds of rock stood several miles in from (*Continued on page 75*)

The author at the end of a delivery flight of a Beechcraft Bonanza.

NO. 215

I LEARNED ABOUT FLYING FROM THAT!

Insidiously, oxygen starvation robbed this pilot of all of his flying experience.

By ROBERT E. RINGLE

ANOXIA! Experienced pilots dread the portent of the word when conditions send them to greater altitudes than they planned. But most think in terms of "blackout."

After 25 years of flying, I had to learn about anoxia by experience. Like others, I have often flown at high altitudes for short periods—18,500 feet in one instance for 30 minutes had no apparent ill effects. What I didn't remember, until after this flight, was that anoxia can come in stages.

I was taking delivery on a 1956 Bonanza at Wichita, Kan., and planning to fly nonstop direct to Tallahassee, Fla.; ultimate destination, Palm Beach. As it turned out, we made Tallahassee in five and one-half hours on 55 gallons of gas, and therein lies the story.

It was a crisp, cold winter afternoon when we reached our selected cruising altitude of 8,000 feet in eight minutes flat. Far ahead lay a deep cloud bank, stretching as far as the eye could see to left and right, but it didn't seem important.

Two uneventful hours went by and the compass heading was good as we cross-checked by omni with Tulsa and Fort Smith. As we approached Little Rock, the clouds came into clearer focus, and the tops seemed at about our altitude. Trimming to climb gently, we kept 1,000 on top. The clouds kept climbing and so did we. Not until 13,500 were we able to level off and stay on top. The clouds were solid and stayed that way for the next hour and a half. The altitude seemed to have no effect. Then the tops lowered gently and we let down with them. We made an omni position check with Meridian and Birmingham. Everything seemed okay. Mentally, I logged the flight.

Four hours and 30 minutes out now. Dusk is settling, and if our calculations are right, we have another hour and 30 minutes fuel left. Whoa! Isn't that a little marginal for reaching Tallahassee in the dark? We're a little perturbed, but what can be wrong? Our ground speed has been averaging 162, so we shouldn't be more than an hour from Tallahassee.

We're back down to 8,000 feet but towering cumulus is making us dodge to the left or right. We tune in Marianna omni and start to track straight in. Better start downstairs, but must duck around these build-ups.

It's almost dark now; we're passing the 4,000-foot level and are below the clouds; lights are beginning to flicker on the ground. Both main tanks are down to one-quarter full and we're working on the right. With a start, we realize our flashlight is in the accessory box in the baggage compartment. Stupid! The chart is very difficult to read in the fading light. Suddenly we notice the Omnimeter's needle wagging slowly from left to right and the to-from indicator giving an unreliable signal. Yikes, what's wrong? Quickly we tune the ADF12D Marianna LF range. The signal seems strong enough, but the bird-dog hunts too—won't point. We've had night effect mess up the ADF before, but not the omni. The right main tank is reading empty.

We turn up the instrument lights to full bright but still can't read the chart, so turn them down again. Soon the engine spits on the main right tank. Quickly we turn the fuel valve to left main. Only one-quarter left; all the others are bone dry. Is it enough to reach Tallahassee and can we find the place, with our navigation radio unreliable and us unable to read our charts?

We fish for Tallahassee Radio on VHF and Tallahassee comes back with a bang. We tell the controller our plight, and inform him we're scared. He asks if we can see any land marks at all. Yes, we're coming up on a small town, but haven't the foggiest notion of its name. He asks if we can see anything else. Yes, we vaguely make out a small, many-fingered lake, but this isn't much help. There are lots of those around here. The last gauge is nudging the empty mark but Tallahassee radio talks in a calm reassuring voice. We're coming up on a larger town and see airport lights, but can't identify it for sure. If it's Marianna, it's an Air Force base, and we can't land there. If it is Marianna, then we should alter our course to the right. We do this. Marianna, if that was it, is soon behind.

Tallahassee radio comes in with an idea. He tells us to contact Tallahassee tower; that he will ask him to surge the high intensity runway lights high and low alternately. If we are close enough, we may (*Continued on page* 87)

The General Motors Matched Power Team of Allison Prop-Jet Engines and Aeroproducts Turbo-Propellers is Proving its Jet-Age Durability in Round-The-Clock "Operation Hourglass"

MODERNIZED TRANSPORT SETS 1000 HOUR FLIGHT ENDURANCE GOAL– Leased from the U. S. Air Force specially for "Operation Hourglass" this modernized YC-131C – military version of the popular Convair 340–is daily logging hours in a round-the-clock, round-the-country flight endurance program unprecedented in the field of modern prop-jet power. Duplicating a cross section of commercial and military transport schedules, "Operation Hourglass" proves with every hour the superior performance and economics of Allison Prop-Jet Power. Currently in production for the new Lockheed Electra and now available for modernization of existing transport aircraft, the matched team of Allison 501 Prop-Jet Engines and Aeroproducts 606 Turbo-Propellers is rapidly establishing itself as a versatile and dependable power plant for commercial and military jet-age transportation.

GM
AIRCRAFT POWER

ALLISON DIVISION OF GENERAL MOTORS, Indianapolis, Indiana

ALLISON PROP-JET POWER

U.S. Mountain Pilot

(Continued from page 31)

for us. Then full throttle, we were skimming on top once more, 20 degrees flap, a few hard bumps on some windblown drifts with the powdered surface snow, and we were airborne.

We turned and headed once more for the smooth white face of the mountain. This was a test of depth perception; a new perspective. The memory of my first night flight came back to me, but without the familiar lights on the level field to guide me. A feeling of disconnection took hold of me. Could I really ever learn to find my way through these dimensions?

Once more we headed for the slope, paralleled it and settled smoothly onto the breast of the virgin snow. It was as exciting as the first run on skis after a snow storm. We taxied farther up the slope, turned off to the side and stopped near the edge of a cliff which dropped unbroken for thousands of feet toward the overcast Rhone.

November in the Alps! Warm sun, no wind, complete stillness, dark blue above, dazzling brilliance around. The slope stretching off toward the cloud-hidden valley below beckoned the skier within me until my spirit went sailing down in rhythmic turns on the unmarked snow. I looked at Geiger and saw in his face that this was his way of life; that it was more than his living. For a few minutes we stood there absorbing that white light; then back in our ski-footed chariot, to the green valley of the Rhone.

For five consecutive days, my wife and I flew with Geiger. Under his instruction, I found myself beginning to feel at home in the new dimensions. My years of experience as a naval aviator accustomed to accurate landings made it easy for me to learn. For my first snow landings, we went to a bowl-shaped glacier two or three miles across "La Plaine Morte," "The Dead Plain." First, was a touch-and-go on the almost level bottom of the bowl; then a landing farther up the slope; a 180 degree turn and a take-off down hill; then off to the other side of the bowl for a little steeper landing higher up on the side; then back and forth a dozen times, 'til we finally stopped for a rest.

One evening we drove with Geiger to show movies of his operations and hear him lecture on what could be done by ski plane in the mountains. He operates with Federal hydraulically-actuated skis made in Minneapolis, USA. These enable him to take off on wheels and land on skis. So equipped, the Super Cub with the red cross of Switzerland on its side has carried hundreds of tons of building supplies and food into the mountains. On his way down, Geiger often flies low over the glaciers in a spirit of safety reconnaissance. On one such return trip from a cargo lift, he noted a man seated by the edge of a crevasse apparently holding on to something. Geiger landed quickly and taxied within a few feet of the man who assured him he was an angel sent from heaven to the rescue of the two tourists who were dangling from the end of his rope down inside the crevasse. Geiger and the guide got them up, loaded them into the plane and soon had the man and his wife, both injured, in a hospital.

After my indoctrination by Geiger, I returned to Aspen, Col., my winter home, and bought a Cessna 180, equipped with Federal hydraulically-operated skis. My only worry in operating the Cessna was that the additional weight made it difficult to turn it around manually in deep snow. After practicing snow landings on the level for several weeks, I felt ready for my first mountainside landing.

I interested Toni Sailer, the Austrian Olympic ski champion who happened to be visiting Aspen at the time, to accompany me. We loaded our skis into the plane in case anything should go wrong. The Cessna performed beyond my expectations. At 12,500 feet, on top of Taylor Pass, I set her down and Toni and I got out. I picked out a take-off run and stepped off 200 yards downhill, marking it so we could see it from the air. Then we took off. We were airborne in less than 150 yards with a slight head wind and 20-degree flaps.

NEXT MONTH IN FLYING

People are the chief ingredient of aviation. Next month's issue deals largely in human experience—how people react to flight, what it does for them and to them, what they put into it and what they get out of it.

Bad weather, high winds and turbulence prevented any further mountain landings until late in April when we went to California to make a mountain movie with Stein Eriksen, the Norwegian 1952 Olympic ski champion. Snow conditions were not good enough for filming on the lower hills, so we took the plane in search of whiter pastures which we found at just under 11,000 feet in the neighborhood of Lake Tahoe. Here we landed on a 15-degree slope and began filming. After some hours of shooting, we had to leave because of clouds.

The next day we landed at just under 10,000 feet near the lift at Squaw Valley and found ideal conditions. A few days later, we flew right down the backbone of the Sierra Range to Southern California over country shunned by pilots because of its ruggedness and remoteness; yet never were we out of range of a safe landing place because of our skis and Geiger's techniques.

The following week we landed at 11,000 feet on Mammoth Mountain, Calif. Five feet of snow had fallen in the preceding few days so that, as we turned across the slope which was 15 to 20 degrees steep, the lower ski slid underneath the snow and slowly bogged us down on the downhill wing. However, the Snow Cat soon came up with a load of skiers, pulled us out and turned us around. Take-off was a little slow in the deep snow but we came off in less than 200 yards.

I made another landing higher up, hoping to reach a small flat shelf where it would be easier to turn around but again caught the lower ski about four feet under the snow. Again the Snow Cat pulled us out. Don Redman, one of the ski lift owners, flew with me this time. We took off down the ski slope and pulled into the air a few hundred yards uphill from the top of the chairlift. Ten minutes later, we landed down at Bishop where we repaired a hydraulic brake line broken by the rope from the Snow Cat.

One day, as we stopped at Bishop for gas, a man came up full of questions about the skis on my aircraft. He took me to his hangar where there were more skis and we discovered we were not the only birds who landed on the slopes of the Sierras. My wife and I became more and more interested in our new friend, whom we learned was Bob Symons, the man who has made many notable pictures of cloud formations in the Sierras. Bob had little difficulty in talking us into spending the night in Bishop with him.

We saw some of the most extraordinary movies we had ever seen. They had been filmed at one frame per second with a Bolex which Bob altered to study formation and dissipation of cloud formed by strong west winds pouring over the Sierras. Bob told us how he had taken the pictures from a P-38 cloud-seeding plane, engines off on the Sierra wave at 38,000 feet. We also saw pictures of hydraulically operated wooden skis which he had designed, built and used in the High Sierras. One of his jobs was to fly past the snow-depth gauges and take photos recording the snow depth at various times during the winter. He took these pictures from his Super Cub flying low with the stick between his knees as he operated the camera. He too had made many ski landings on mountain slopes and lakes.

In summer he transferred to Whitaker tandem gear and hauled in mining equipment. After uphill landings, he would taxi downhill in long traverses as the slope was too steep for brakes to hold going straight down hill. After unloading, he would taxi back uphill also in zig-zags to arrive high enough for a downhill take-off.

The downhill take-off in high mountains is a lot more comfortable than a long flat run on a lake. I have taken off on good fast powder snow down a 15-degree slope, into a 10 to 15-mph wind at 10,500 feet, in as little as 50 yards; but had great trouble taking off in 1,000 yards a few minutes later from a lake a mile long at 8,000 feet in slightly slower snow.

This current winter, I am looking forward to flying skiers into some of the marvelous high mountain slopes around Aspen, from which they can ski back down to the highway and be met by taxi. Ten minutes by plane instead of a five or six-hour climb!

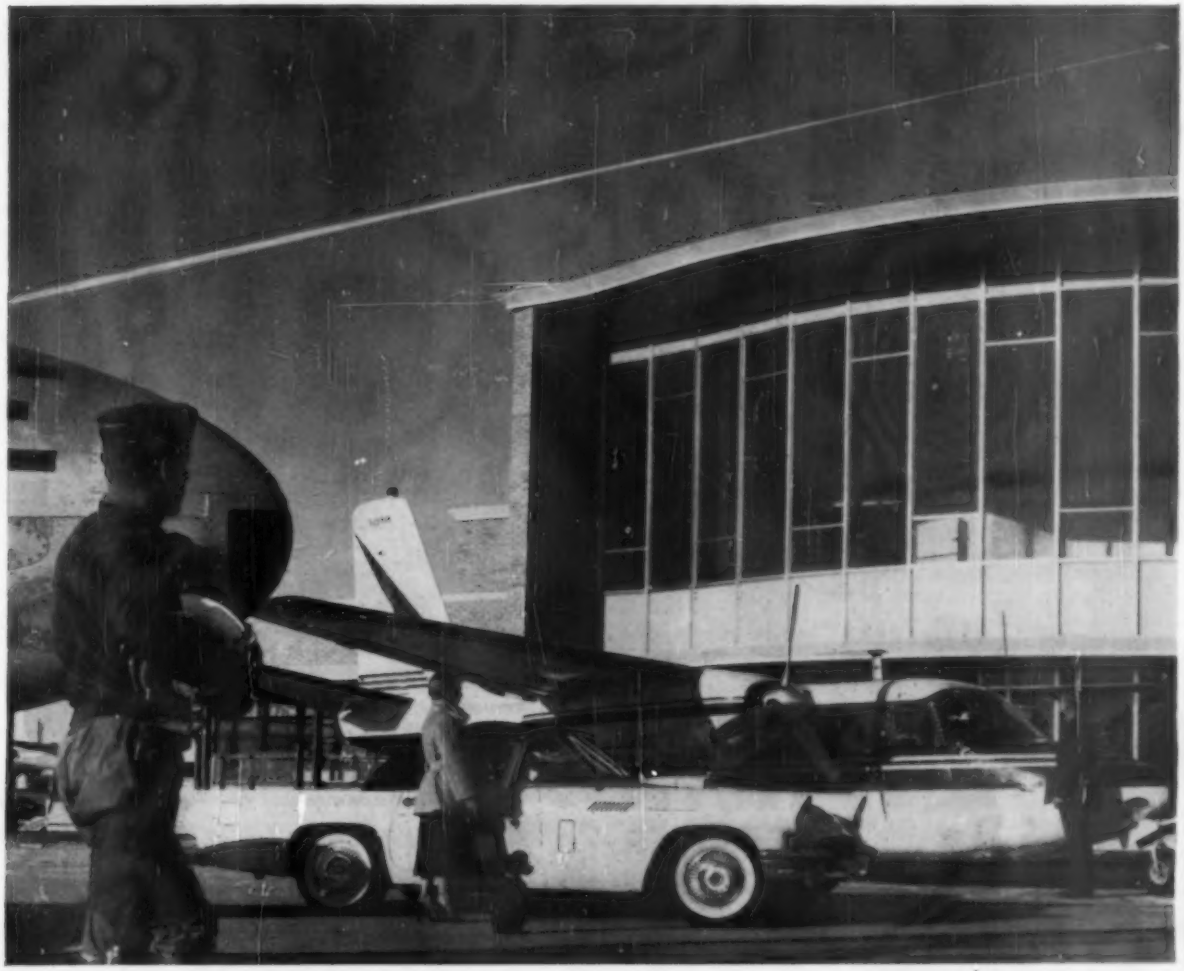
One of our hopes for the future is a flying tour of the glaciers of Europe by ski plane; and a little formation flying with Herman Geiger who originated this matchless fun in the first place. END

SAC Silver Jubilee Newsreel

BY JACK PATTON

AND NOW THE FUTURE
GET THAT DUST SPECK, ESAU.
NOVEMBER 1957 FRANTIC ACTIVITY AS SAC'S NEW TERMINAL NEARED COMPLETION.
WE CAN'T WEAR THESE OLD CLOTHES IN HERE!
SACSTERS FOUND NEW QUARTERS A FAR CRY FROM OLD HANGAR OFFICES.
CURB SERVICE!
AND A CUSTOMERS' CONFERENCE ROOM, TOO.
CUSTOMERS OOHED AND AHHED AS THE WRAPS CAME OFF.
PEEL ME A GRAPE .... HERMAN.
LUXURIOUS FLIGHT ROOM FOR PILOTS. ANOTHER OF SAC's FAMOUS FIRSTS.

The eyes of Texas and of all the winged world are on AMERICA'S FINEST BUSINESS FLYING TERMINAL. Open this month!



1932 —A QUARTER CENTURY OF LEADERSHIP— 1957

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Passengers and Crew Agree! Puritan Oxygen Masks Are COMFORTABLE TO WEAR EASY TO ADJUST

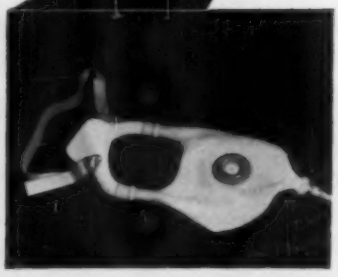
DISPOSABLE, PLASTIC PASSENGER MASKS

THEY ARE LOW-COST, TOO!

PILOT AND CREW MASKS

Passengers have a right to expect comfort and pleasing appearance in an oxygen mask. The Puritan disposable mask — originally developed to meet rigid hospital requirements—has many advantages to offer. The polyethylene nose piece fits the face comfortably and is easily adjusted to each individual. These complete, light-weight masks come individually packed and can be thrown away after use (no bothersome sterilizing). The Puritan disposable mask answers your passenger desire for comfort and convenience . . . answers your problem of a low cost unit.

Priced at only $1.00 each F.O.B. Kansas City (lower unit cost in larger quantity) No. 114011.



Ask any pilot or crew member what he wants in an oxygen mask. Chances are he'll say, "comfort, coolness and easy breathing." Here is the mask that gives all of these advantages. The Puritan No. 114000 nasal oxygen mask. A constant flow, rebreathing type mask with a comfortable fitting plastic nose piece and latex rubber bag. The nose piece is arranged to provide a perfect air flow in and out of the bag so that respiratory effort is minimized and mask is cooled for further comfort.

Carbon dioxide build-up is controlled.

No microphonic connections needed.

Priced at only $8.25 ea. F.O.B. Kansas City

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Carry in airplane, boat, etc. for quick transportation. Fits in luggage compartment of any plane. Automatic clutch, positive brake. Powerful 2 cycle, 1 cylinder Clinton engine gives speed up to 35 miles per hour.

PRICE $245.00

ARGYLE SCOOTER CUB—Div. of and Mfrd. by PHILLIPS CONVEYOR CO., MEMPHIS, MISSOURI

I Built and Flew America's First Monoplane

(Continued from page 39)

wing. We mounted the engine and propeller, clamped the pilot's seat temporarily in position and balanced the entire structure to coincide the center of gravity with the center of pressure. Then, we decided to move our operation out to the Hempstead Field in Mineola, since the Society's lease at the Park was about to expire.

We disassembled the plane enough to pass it through the windows onto a truck. All went well until we got to the wings, which proved to be about a half-inch too wide. It cost us the damages of hacking the window to size to get the wings out, but it was worth it.

After a five-hour trek from the ferry at 34th Street, the Walden III reached the site of its historic flight. The creaky shanty my limited finances permitted us was about 30 by 40 feet. Its cracked windows faced the Old Country Road and a large door opened on the field. Our only luxuries were a pot-bellied stove and a frozen water outlet.

It took us almost a week to get our headquarters in shape and to assemble the plane. We had learned at Morris Park that flight tests had to be conducted at daybreak or at sunset, when no wind stirred. On that sunny winter morning of Dec. 9, 1909, the unintentional historic flight was made near where Roosevelt Field was later to be located.

My early flights in the Walden III were witnessed only by the boys at the field. After its first air-borne venture, which resulted in damage to the engine and propeller, the engine was repaired to fly again and again until Aug. 3, 1910. A number of straight-away flights resulted in shifting the pilot's seat forward to relieve a slight tailheaviness. This was accomplished by adjusting the turnbuckles of the wires which fixed the seat in the space between the wing and the landing gear.

Now that the machine had proved itself, the original one-gallon fuel tank was replaced by a torpedo-shaped, ten-gallon tank suspended above the center section of the wing where it provided a more positive gravity feed. The plane was normally nose-heavy so that, in case of motor failure, the nose would automatically drop and prevent a stall. This was accomplished by setting the horizontal tail surface at a slight negative angle so that the slipstream kept the tail down in normal flight. When the prop wash dissipated, the tail would therefore rise and the aircraft would become nose-heavy. There was so little margin between flight and non-flight that this idea for a pusher-type aircraft was a valuable safety factor.

But Walden III died on August 3, the day before the last payment was due on the Anzani engine. And her death brought me the first recognition I had experienced in the development of the first successful American monoplane. The crash resulted from a down-draft which sucked the plane into the "graveyard"

(Continued on page 60)

NOW AIR-O-EAR 23 CHANNEL ... HIGH PERFORMANCE VHF TRANSMITTER-RECEIVER

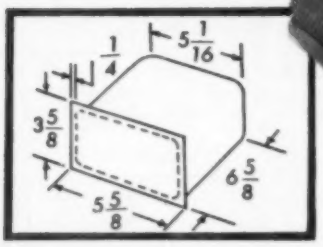
FOR ONLY $189.00

30 to 60 MILE RANGE WITH NO IGNITION SHIELDING REQUIRED!

The Air-O-Ear TR-102 VHF transmitter-receiver is a precision instrument, light weight and compact in construction, and will easily mount in any light plane. The 23 channel transmitter is sufficient for both VFR and instrument conditions. The receiver is tunable over the entire General Aviation band of 108 to 128 mc. The TR-102 is unique in that it will operate satisfactorily in planes which have no ignition shielding. This feature combined with its low price, small size and ease of installation has made the TR-102 an extremely valuable instrument for the light plane owner.

- ***EASY TO INSTALL IN ONE HOUR OR LESS!***

MEETS FCC AND CAA REQUIREMENTS



WEIGHS 2½ LBS., DRAWS 4 AMPS AT 12 VOLTS. POWER SUPPLY; 4" x 4½" x 6", WEIGHS 5 LBS.

HERE'S WHAT YOU GET

1. 23 Channel VHF Transmitter and Tunable VHF Receiver
2. Power Supply — Operates from Either 6 or 12 Volts
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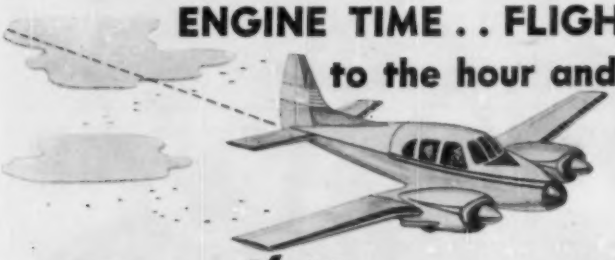

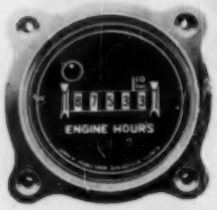

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(Continued from page 58)

beyond the Parkway embankment. Banner headlines in the press of the country screamed the news. The New York Evening Journal announced in bold red letters: "Walden Airship Falls." No local, national or foreign daily newspaper missed reporting what I believe was the second serious aviation accident in the United States (the first was when Lt. Thomas F. Selfridge was killed in a flight with Orville Wright on Sept. 17, 1908, at Fort Myer, Va.).

One newspaper had every bone in my body broken and undertakers waiting for their harvest. Actually, I acquired only a fractured collarbone, an ankle injury and three broken ribs. My greater concern was that I would not be able to meet the final payment on the Anzani. A friend came to my rescue, however, with the idea that we could charge admission to view the remains of the Walden III. This idea got me solvent again.

Next, in restored health, I formed the Walden Airplane Co. which built six additional versions of the Walden III. We offered flying instruction and planes for sale. Interest was great, but cash was scant. The only real financial transaction we made was by hanging one of our planes in the exhibit hall where a convention of the United Dressed Beef Co. was being held in New York. We were paid $300 to place cuts of beef in a basket on the pilot's seat to show how perishable victuals would be delivered in the future.

Experimentation in five succeeding models of the Walden III resulted in the construction of the Walden IX, which became the first all-American monoplane to be licensed by the Federation Aeronautique Internationale and the Aero Club of America.

The Walden IX was a prototype of the "III" with these changes: the IX was powered by an American engine, a 40 hp Hall-Scott. It had four 4x5 cylinders, two Mea magnetos and double ignition. The "ear flaps" were removed and Farman ailerons substituted for lateral stability. A nose plane surface was added and the area of the tail surfaces was decreased. All the steel tube struts and engine mounting were filled with second-growth hickory for added strength and light weight.

Construction of airplanes in those days involved the use of materials which might surprise the modern airman. For example, Irish linen was used to cover the wings. Straight-grain ash was used for the longerons; spruce for laminations. Propellers were of laminated mahogany. The steel tubing used for the chassis and outriggers was braised in sections. Fittings were generally motorcycle turnbuckles, while piano wire was used for the guy wires.

The "brakes" of those days were also marvels of ingenuity. A metal fork fixed on the axle bar of the main carriage was pronged into the sod by the pilot. It was a crude device, but effective. The tricycle landing gear was used in those days, too, because it proved most effective for ground-travel of the nose-heavy craft. Motorcycle tires were fitted on the Walden III gear. Its successors were equipped

with Pennsylvania four-inch tires.

The sleek monoplane which resulted from many months of trial and error finally beeame a public curiosity. In September of 1911, three months after it had been licensed, I entered Walden IX in the air meet at Brighton Beach. It was an international event and included some of the best-known flyers of the time: Claude Graham White and Tommy Sopwith, the renowned British pilots; George Beatty, Harry Atwood and Eugene Ely.

I had just recovered from minor injuries resulting from the crash of the Walden VII near Hempstead. The plane had been completely demolished and my pocketbook was straining desperately. The promoters of the meet offered me $150 to set up the All-American Monoplane as a static display. If I flew the craft in sustained flight for at least 15 minutes, I would get $1,000 for each flight on each of the two days of the meet.

The first day, I held the plane in the air a full 22 minutes, reaching speeds of about 60 mph as I flew 24 laps around the track. But I was concerned with the evident lack of surplus power due, no doubt, to the low octane gas I was forced to use. For the next day's flight, I obtained a better-grade gas and doped the ten gallons with two ounces of ether. That did the trick.

After completing a circle of the field on the second day, I straightened out for the more open spaces and found myself over Coney Island. But I couldn't gain the altitude I wanted, even with the better gas. It never occurred to me that the accumulation of carbon in the cylinders during the many hours of use had reduced the limited power of my engine to a dangerously low level and that it needed a general overhauling. I had to hedge-hop back to the field but circled at low altitude several times before landing to a rousing reception from the crowds. The entire field was in an uproar. The cheers and applause almost drowned out the playing of the national anthem by the military band. An enthusiastic group of young men picked me up on their shoulders and rushed me into a waiting car to parade around the race track.

At first, I couldn't understand what had happened. Many of the onlookers had probably read of my mishaps and had expected the worst to happen to me that day. Others probably believed my "stunts" were intentional and appreciated my daring, without suspecting I couldn't have flown any higher because of lost engine power. The crowd had been informed of the flight of the First American monoplane by its designer, builder and pilot." I was the only one among all the pilots who was flying a plane of his own creation. For those who had watched and understood the implications of what I had gone through during the last two years, it was a great relief to see me safe among them. The press featured my participation in the air meet and, during the next week, I received flying contract offers from state fairs throughout the country. The small number I was able to accept promised a return of $26,000, which would

(Continued on page 62)

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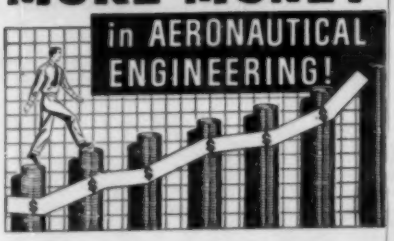

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(Continued from page 61)

prove a boon to my depleted treasury.

Two of the meets which resulted in further acclaim for the Walden IX were the international event at Nassau Boulevard and the Kinloch aviation races at St. Louis. At Nassau, my take-off was into a strong wind, rising to several thousand feet and volplaning into the field. I learned from this just how helpful the wind could be at take-off and landing. After this experience, I always preferred windy days. It was a far-cry from the dead-air flying of the Walden III days!

At the urging of the crowd, I tried an encore, which proved to be my downfall. After circling the field several times, I came in for a landing only to find a Wright biplane making its take-off run in the same direction. I couldn't avoid his prop wash, so I side-slipped into the ground with terrific impact of the left wing. I was thrown clear, suffering only a temporary paralysis.

The pilot of the Wright was Lt. T. D. Milling, who was the first Army pilot to fly at night. Last summer, I met General Milling at a dinner in Washington. When I showed him the picture of the near-collision at Nassau, he turned to me and said, "Walden, I thought I'd killed you!"

Two weeks after my hair-raising landing at Nassau, I attended the air meet at St. Louis with my repaired monoplane. In making my favorite maneuver of volplaning from several thousand feet to a landing in front of the grandstand, I found the wind stronger than I had judged. The result was that I landed short in a corn field. My forced landing resulted in minor damage. The greatest threat to the preservation of the airplane, however, was souvenir hunters who flooded the field.

After my usual maneuver as the closing flight of the meet, I dipped into a steep volplane into the field and, after a perfect three-point landing, raced along the ground toward the grandstand. There the other planes in the meet had lined up in perfect order, leaving a space about the width of my little monoplane. The on-rush of my plane toward that small space brought the crowd to its feet. A catastrophe seemed unavoidable.

Men and women scrambled from their seats. My helpers ran to catch the plane in an attempt to veer the "runaway" from its disastrous course. But I knew exactly what I was doing and did it. The "grass cutting" of my early days had taught me well. Calculating my distance, speed, and the decelerating effects of my fork-type brakes, I stopped to the dot on the spot I had picked.

The sensation caused by that ground-run was summed up by the banner headlines next day: "Dr. Walden Closed The Kinloch Aviation Meet In A Burst Of Glory."

The first flight of the first American monoplane seemed even more fulfilled two years later. But it was not until the *Spirit of St. Louis*, the *Columbia* and the *Fokker F-10* (Trimotor) crossed the Atlantic in 1927 that the monoplane concept reached the forefront of U.S. aviation.

And as I look back over the years since 1909, I am reassured that mine was the right course in straining to develop the type. It's a good feeling to have been right. END

ABOUT THE AUTHOR

Dr. Henry W. Walden as he appears now.

The story of the first American Monoplane is only one segment of an unpublished autobiography written by Dr. Henry W. Walden.

Appropriately enough, Dr. Walden was born in Walden, Mass., in 1883. And despite the circumstances which led him to a career in dentistry, Dr. Walden has spent almost a half-century developing devices ranging from a safety gadget for the gas lights in his Mother's apartment to the design of the first air-ground, radio-controlled missile.

Although many of his contributions to aviation have been largely ignored, Dr. Walden may take great pride in the fact that just last Fall, the Smithsonian Institution placed on exhibit the models of the Walden III, the Walden IX and the Walden Aerial Projectile—the guided missile built by Dr. Walden in 1915.

During the last half-century, Dr. Walden has held some 50 patents. He has made and lost two sizable fortunes so that today, in his dental office in mid-town Manhattan, surrounded by his workshop and filing cabinets bulging with clippings, he is rich only in the satisfaction of a life thoroughly lived. END

The Walden Aerial Projectile was the first radio-controlled missile; developed in 1915.

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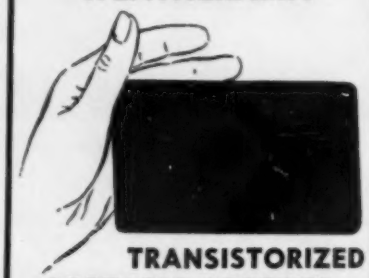

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(Continued from page 33)

of activity for everyone, no matter what the interests. One can go moonlight cruising, horseback riding, and to watch the bullfights. There is organized sight-seeing and plenty of interesting markets for shoppers. In the large hotels, one need not worry about the drinking water or the food. North-of-the-border meals are featured everyplace, but seafood and wild duck are native specialties. One can have fresh papaya, mango or pineapple with any course.

Hotel accommodations are good in Mazatlan, with several large hostelries to choose from, including: The Freeman, the Belmar, Motel La Siesta, The Flamingo and the Playa Mazatlan. We found all the airports on our trip quite satisfactory.

To plan our trip, we used World Aeronautical Chart Maps; 471 Sonora River, 520 Gigantic Range, 521 Lake Santiaguillo, and 590 Lake Chapala. Between towns it isn't required to file a flight plan, but you can (and should) for six pesos or 50 cents in American money. The gas may be from a pit, truck, pump, or in barrels. You can always get at least 80 octane, often 90 or 100, but they carry no detergent oil. It is advisable to bring your own or use their regular oil.

Forty-eight hours before your trip, wire the first Mexican airport at which you intend to land, care of the Director of the Airport, giving the following information: the type of plane, number of passengers, their nationality, the number of your plane, your pilot's license number, the length of time you plan to stay in Mexico and your final destination. However, you must land for inspection on the United States side, at Nogales, Ariz.

For your border requirements you will need a Mexican tourist card (you show this going into Mexico), and a smallpox vaccination certificate obtained from your doctor (you show this coming back at Nogales). Your tourist cards and information may be obtained from Mexican consulates in any of our large towns. The cost for the tourist card is three dollars and it is good for six months, but doesn't allow you to transact business in Mexico.

We checked into the Nogales airport on 122.8 mc. Unicom. They have a paved field with fair facilities. It had no lunchroom, but you can obtain coffee, if someone at the field remembers to fill the pot. We took along sandwiches and cookies and had a snack while they gassed our plane. Two hours and 12 minutes after leaving Nogales, we arrived at the Hermosillo field. This was our first landing at a Mexican airport, so they checked our visitor's permits and the plane. We learned that gasoline costs about one peso, seven centavos a litre. This would be approximately 35 cents a gallon for 90 octane.

Hermosillo is the capital of the State of Sonora and has about 500,000 people. It is a very cosmopolitan college town with many places to see. Surprisingly, like the

(Continued on page 66)

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The airport is 17.5 miles NNW of Los Angeles, which city owns it, and 2.6 mi. NW of Van Nuys. Main runway is concrete, N/S, 6,000x150 ft. Two-way radio required. National Guard jets are based here. Gas available is 80/87, 91/98 and 100/130. The Norman Larson Co., Valley Pilots Flying Service and Plainservice, Inc. offer all the service you could possibly need.

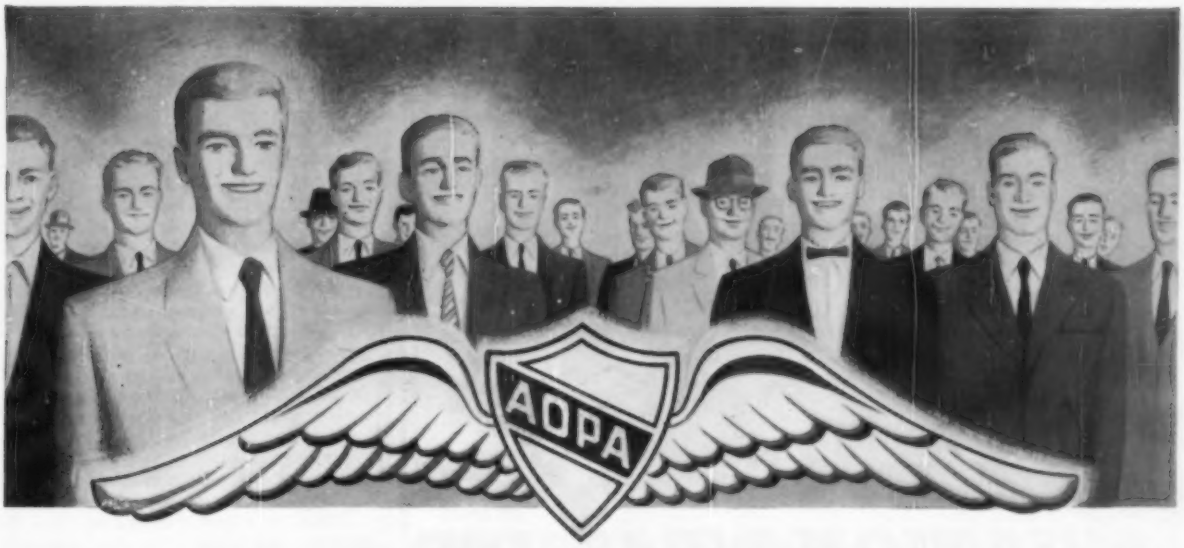
(Continued from page 64)

other Mexican coastal towns, Hermosillo has no VHF. They transmit on 3023.5 kc. Some of the better hotels are the San Alberto, Hotel Laval and Hotel de Anza.

Our next stop was Guaymas, a town of incongruities. For miles before entering the city, you see nothing but dry desert and cactus. All of a sudden you see the ocean. In this interesting fishing port, the cactus literally grows on the beach! There are many nice, air-conditioned places to stay in Guaymas: the Hotel Playa de Cortes, Hotel Miramar Beach, Hotel Rubi, Hotel Casa Grande, Guaymas Inn Motel, and Motel Flamingos. The airport in Guaymas is pretty good, but only partially paved. The handicap here, as at all of the airports in Mexico, are the buzzards which fly at about 700 feet.

The next morning we flew the 2½ hours to Culiacán, Sinaloa. This was the only airport on the entire trip we felt was substandard. Culiacán is noted for its outstanding native market. If you

(Continued on page 68)



2,225 NEW MEMBERS IN SEPTEMBER...

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- *12 issues of The PILOT—AOPA's official, informative magazine.*
- AOPA SAFETY SERVICE—immediate notification of CAA DIRECTIVES concerning your aircraft.
- AOPA Pilot's lapel wings and decal for automobile or aircraft.
- Handy AOPA-TWA Courtesy card provides you with help along your flight route.
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- Participation in advantageous insurance coverages available through well known aviation and life insurance companies.

And—you will find that AOPA is always the first in fighting legislation and regulations detrimental to the welfare of private pilots . . . always first in the fight for advancement of civil aviation.

You are eligible for AOPA membership if you have soloed or own an aircraft.

AIRCRAFT OWNERS AND PILOTS ASSOCIATION
National Headquarters, Dept. F-158, Washington 14, D. C.

I would like to apply for Active Membership in AOPA. Enclosed please find my check or money order in the amount of $10.00.

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Address _____

City_____ State_____

Pilot License Number_____

Ratings _____

I first soloed an airplane at_____

Date of First Solo _____

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Make_____ Model_____

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(Continued from page 66)

need to stay overnight, the El Mayo is generally recommended.

From Culiacán to Mazatlan took us about one hour and 45 minutes. The Mazatlan Airport is very modern and everyone was extremely helpful. We were surprised to see an old Ford Tri-Motor on the field. It flies in from the mountains several times a week, bringing passengers and silver bullion.

After a few days in Mazatlan, we completed the second phase of the trip and flew down to Tepic, the capital of Nayarit. This extremely clean city is in an absolutely luxuriant part of Mexico where everything grows a lush green. As soon as we left Mazatlan, the land became quite tropical. When we landed, the field hands were clearing a section of a large sugar cane plantation and, as we taxied up the strip, some little children ran up to the plane with bouquets of flowers.

Plants of every description seem to grow in profusion in Tepic. Even the main streets have pots of blossoms on every corner and royal poinciana trees line the streets. The three best hotels are the Imperial, Sierra del Alicia and the Posada de La Loma.

We hired a cab for the 50 miles to San Blas. We traveled through jungles of skyscraper palms, banana trees and mangoes.

San Blas' buildings of thatched roofs give you the impression of an African village. On a cliff overlooking the town are the ruins of a Spanish fort that once held off the pirates which lay in wait for Chinese treasure ships in the 16th century. There are remains of shipyards, vaults and some bells in an ancient mission about which Longfellow wrote a poem. Surprisingly enough, this is one of the first places the Spaniards settled, and it was New Spain's closest link with the colonies in California.

If you intend to hunt in San Blas, bring hunting clothes, ammunition, camera, and a telescopic lens. Col. Tex Purvis in San Blas can help you with plans for jaguar hunting. Down there they prefer to search the jungles systematically. It is expensive to be sure, but you will have all the conveniences that are available. According to the record, between 1869 and 1957, only 12 men are listed as having killed a jaguar, but everyone swears the jungles are full of them.

We returned to Mazatlan just in time to celebrate one of the many holidays which Mexicans celebrate at the slightest provocation. We were fortunate to be there Feb. 5—Constitution Day, which is like our Fourth of July. They celebrate the signing of the Constitution executed by Juarez, with wild festivities from parades to bullfights. Back in the Plaza Revolucion, as in all the squares in Mexico, crowds gathered in the evening for fireworks. They were unperturbed by the dangerously flying pinwheels and the spray of colored fire from a strange birdcage-like structure made from cane rising 40 feet.

The flight back to Norwalk, Calif., was as pleasant and uneventful as the trip down. And we were back in time to feed the dogs their Sunday dinner! END

Have You Read?

(Continued from page 20)

unit, exploring the thoughts, moods and actions of the fighter pilot who must mete out or receive a ruthless measure of combat "justice."

AIRPOWER BOOK CLUB

RECENTLY launched, "The Airpower Book Club," sponsored and managed by the Air Force Association, offers club members top quality air books at low prices.

The Club's announcement culminates several years of survey and planning by civil and military aviation leaders. All airmen long have recognized the need for dissemination of air literature reflecting the realities of the air age.

The Airpower Book Club comes at a time of crisis in this age of scientific marvel. Civilization has pressed much farther in actual aeronautical accomplishment than in understanding of it. Understanding can come only through organized literature which records, interprets, analyzes, compares, and points out the future.

Annual subscription to the Airpower Book Club is $15, if paid in full upon joining, or $18 if spread over three payments of $6 each. Members will receive *four books* with a guaranteed minimum retail value of $25.00 plus a "premium" book upon joining. They also will receive free subscription to a quarterly publication, "The Airman's Bookshelf," a comprehensive review of current selections and listings of several hundred pertinent volumes on airpower, aviation and related professional fields. All books listed in the quarterly review may be purchased through the Airpower Book Club at ten per cent discount to members.

The initial gift premium to new club members will be "A History of the United States Air Force. 1907-1957." This highly illustrated one-volume history of the USAF (the first ever published) was prepared by a group of professional air historians and carries a retail bookstore price of $6.75.

The initial selection of the Airpower Book Club will be a biography of Billy Mitchell, entitled, "Mitchell: Pioneer of Airpower," by Isaac Don Levine. First published in 1943, the new edition has been updated and carries a retail price of $6.

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Membership application along with subscription price should be sent to The Airpower Book Club, Mills Building, Washington 6, D. C.

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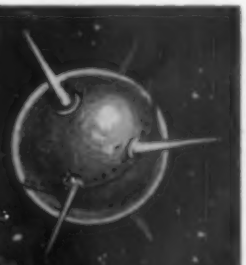

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AIRCRAFT OWNERS AND PILOTS ASSOCIATION

AOPA NEWS

Aircraft Owners and Pilots Association is a service organization for the private pilot or aircraft owner. AOPA's full time staff is devoted to helping the individual pilot. Its aim is "To make flying more useful, less expensive, safer and more fun."

Headquarters address is Box 5960, Washington 14, D. C. Members also receive a special AOPA edition of FLYING, newsletters and confidential aviation data. Opinions expressed in this column are not necessarily those of FLYING Magazine.

AOPA 180° RATING REPORT

An AOPA Special Report has been prepared on the AOPA 180° Rating as a means of getting information about this important life-saving technique into the hands of as many pilots as possible.

The report explains briefly the history of the rating, what it is, and how pilots can get the training. It contains a complete list of 180° Rating Instructors who had been certificated by the AOPA Foundation up to Oct. 1. The listing will be revised from time to time in order to include additional instructors as they qualify.

Copies of the report will be mailed to any pilot, whether or not he is an AOPA member, upon request. Such requests should be addressed to the Aircraft Owners and Pilots Association, Washington 14, D. C.

The listing of the instructors reflects the increased interest taken in the AOPA 180° Rating by state aeronautical agencies. Illinois, the first state where a statewide program was set up by an official agency, continues to lead the nation in the number of instructors available to train pilots how to turn around and get out of bad weather, or let down through it, if they should fly into it unexpectedly. A total of 63 trained Illinois instructors have been certificated by the Foundation. Many were trained at the University of Illinois Institute of Aviation, where the course was developed under an AOPA Foundation grant, but the Department of Aeronautics' program has been effective in making the training available in all parts of the state.

In 1955, the Department of Aeronautics sent Eugene Utz (AOPA 33218), one of its safety representatives, to the University of Illinois to take the course. Utz instructed other departmental safety representatives in the technique. The state representatives then gave the course free of cost to any Illinois flight instructor who agreed to pass the rating on to a pilot or instructor without cost to the trainee.

Illinois officials have been pleased with the results of the AOPA 180° Rating Program in their state. Utz expressed the Department of Aeronautics' views on the course in a letter to the AOPA Foundation.

"We, here in the department, feel that the 180° course and the ensuing discussion among pilots with regard to the course and the types of weather in which it might be used has placed a new emphasis on private pilot operations during bad weather," Utz wrote. "We feel that the course, and all the publicity and discussion it has generated, has unquestionably had a bearing on reducing the number of weather accidents in the state."

New York is another state where the official state aviation agency has given the 180° program its full support. There were 13 AOPA 180° Rating instructors in the state on Nov. 1. This compares with the one lone instructor available in the state earlier in 1957.

Selection of W. G. Wood (AOPA 29741), New York Department of Commerce pilot, as the New York representative in the nationwide training program undertaken by the AOPA Foundation and the National Association of State Aviation Officials, marked the beginning of the state activity.

William D. Carlebach, first deputy commissioner of the Department of Commerce, in a recent speech told about the skepticism regarding the 180° Rating prevalent when the selection of Wood was made.

"Jack Wood, a man with many, many years of experience with all types of aircraft, was extremely skeptical about this course," Carlebach told the 10th Airport Development and Operation Conference of New York held at Syracuse, N. Y. "When Claude Friday [state areonautical director] suggested he go out and take the course, and come back and teach some of the instructors and field operators in New York State, Jack virtually rebelled. He did finally go out to Illinois and took the course. He came back a converted man. He thinks it is the greatest course he has ever taken, and he is teaching it with real enthusiasm. That has been enough to convince all of us, and anyone who is in any way skeptical, that this course is an absolute 'must.' It is a wonderful life-saving method."

Other states have instituted active training programs in the technique. Texas and California are typical of states actively promoting the course in the interest of flying safety. The Texas Aeronautics Commission has a program under way which is expected to place instructors at strategic points throughout that large state.

The California Aeronautics Commission also is pushing the technique. The October issue of the Commission's monthly Safety Bulletin devoted four pages to the 180° Rating, including photographs explaining the technique.

AOPA 180° Rating instructors presently are available in 40 states, Canada, Alaska, and at a U.S. Air Force base in the Far East.

AOPA GROWS

A record number of new members—2,517 of them—joined AOPA during October, 1957, breaking the monthly record for the second month in a row. The total was 2,225 for September.

While the new-member record was being broken, renewals continued at a high rate. In October, 4,528 (87%) of the AOPA'ers whose membership expired during the month renewed their affiliation. This brought the total memberships received during the month to 7,045, also a record. In October, 1956, the corresponding total for new members and renewals was 5,770. The overall total for September, 1957, was 6,455—590 less than were enrolled during the following month.

AOPA's overall membership gained 8% during the 12-month period Nov. 1, 1956-Oct. 31, 1957. It stood at 67,500 on Oct. 31, 1957. The total was approximately 60,000 on the corresponding date of 1956.

PILOTS GET REMINDERS

"Thanks for reminding me of my medical."

The above is the gist of many letters received at AOPA national headquarters from pilots who received advance notice of the expiration date of their medical certificates.

From 10,000 to 20,000 of these notices are mailed by AOPA each month. They go to AOPA members and non-members alike as one of the services AOPA performs for aviation as a whole in the interest of safety in the air.

At the present time, it is not possible to notify all active pilots of the expiration date of their medical certificates, but AOPA officials expect to be able to do so eventually. This service was started on a small scale in December, 1955, and has been growing steadily as pilot names are added to AOPA's IBM card system. Approximately 148,000 names are now in the files. This is about half of the 298,000 civil pilots holding current medical certificates. Names are being added to the files at the rate of several thousand each month.

Effort is made to get notices to the affected pilots at least 30 days in advance of the date their certificates become invalid. Usually the period ranges from five to six weeks. The IBM cards are processed during the latter half of the month to determine which certificates expire during the second month in advance. For instance, IBM cards processed in November give the names and addresses of pilots whose certificates expire during the coming month of January and notices are mailed about December 1.

MEMO

● **FLYING,** with a stability of 30 years' continuous publication, is the world's most widely read aviation magazine.

Average net paid circulation, last half of 1956:

FLYING	190,226
AVIATION WEEK	62,970
AVIATION AGE	51,583
AMERICAN AVIATION	46,443

● Of the 169 publications with an ABC circulation of 100,000 or more, **FLYING** stood second highest in rate of growth for the last half of 1956.

● **FLYING's** average net paid monthly circulation for the six months' period ending June 30, 1957 was:

221,236*

● Of this amount, 100,427 were sold on the newsstands of the United States.

● **FLYING's** paid foreign circulation of 26,403 is distributed in 81 countries and possessions of the globe.

● **FLYING** is proud of its role in broadening the base of public acceptance and appreciation of aviation in the United States.

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To finance the project, I'm marketing a line of distinctive products related to the "Let's Fly" theme. The three items mentioned below are the first of many products from all over the world that will be introduced in months to come. *I'm particularly inviting inquiries from dealers . . .* or individual orders may be sent direct to me in Winona.

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Invisible Ice

(Continued from page 46)

cough and then backfire. This action will clear some of the ice for a few seconds and the rpm will pick up. But the ice will build up rapidly again and start the strangling action over again.

Depending upon the "morale" of the engine, it might repeat the backfire again and perhaps a third time. If the pilot still does not take any action, he will very likely make a quick switch from power-pilot to glider-pilot.

If ice has formed, carburetor heat should be applied at once. The function of the carburetor air heater is to prevent or eliminate the formation of ice within the carburetor, also around the throttle valve adapter and in the passages of the induction system. When the pilot pulls the carburetor heat control in a standard-model Cub or Aeronca, a gate near the airscoop ducts the incoming cold air to a circuit which is heated by exhaust gases, and then leads into the carburetor. The incoming air, thus heated, brings the temperature of the mixture of air and gasoline passing beyond the carburetor to a point well above the freezing mark.

In view of the immediate effect of the warm air on the ice, there is one note of caution. If the pilot has failed to detect ice in its early stage and does not apply carburetor heat until the engine is coughing and snorting, it is possible to melt the ice at so rapid a rate that some water (melted ice) will not vaporize and then foul the engine.

How to detect moisture in the air—There are times, of course, when it is obvious that moisture is present. It is very likely that icing will take place when flying in clouds, rain, fog, sleet and wet snow.

Also, any prolonged flight in the haze line is apt to lead to an icing condition. A haze line is the top of the layer in which dust and moisture are mixed vertically. Since the moisture originating at the earth's surface does not penetrate the haze line, the dew point drops very abruptly above it and is an area relatively clear of any icing threat.

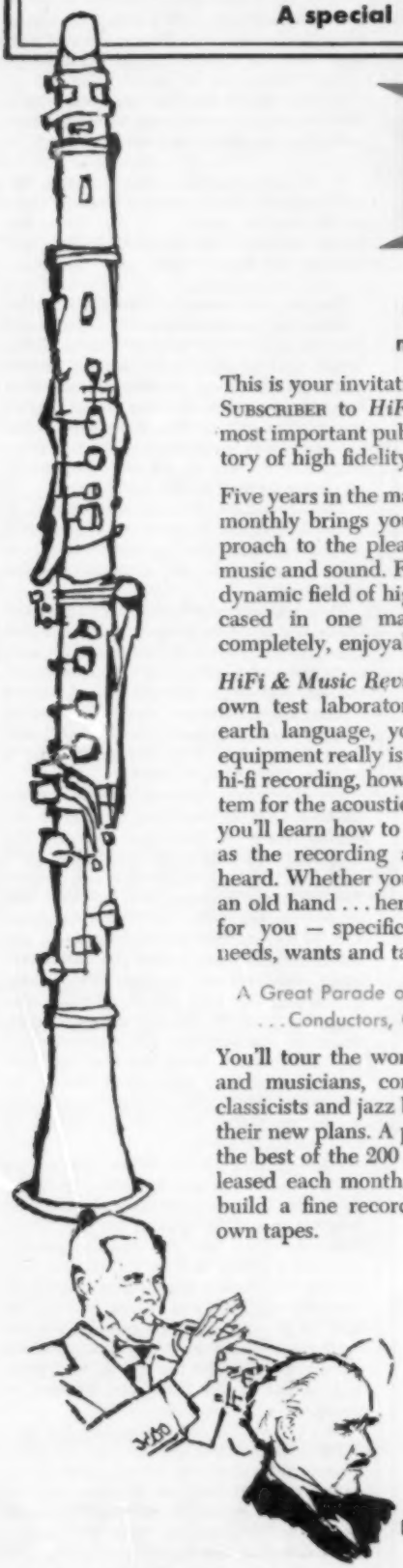
But there are times when the sky is clear, with no pronounced haze line and yet icing conditions exist. This is when the relative humidity is high. To detect the presence of moisture at such a time, all the pilot need do is pull the carburetor heat control and note the effect upon the engine. If the rpm drops about a hundred or so, it is a good indication that the carburetor is clear. Needless to say the throttle should not be moved during the check.

If the rpm increases after carburetor heat has been applied, moisture is present in the air and ice was forming in the carburetor's induction system. Under such conditions it is wise to keep the heat on until the pilot is sure he is out of the icing area.

Can't find the carburetor heat control? This is no joke. In some airplanes this control is missing. If the pilot is unable to locate the control during his pre-flight cockpit check, he had better check with

(Continued on page 74)

A special Pre-Publication Offer to readers of FLYING



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(Continued from page 72)

a mechanic or someone thoroughly familiar with the airplane. There are two reasons why the control might be lacking:

1. The engine may be equipped with a fuel injection system and therefore does not have the carburetor ice problem.

2. In some of the older aircraft, the carburetor heat adjustment is made right on the engine proper. In that case, the heater valve should be wired in the "on" position for winter flying.

Starting and ground-running the engine—Most engine manufacturers recommend that the carburetor heat control be in the "cold" position during the starting period. This will eliminate possible heater valve damage, should a backfire occur. After the engine is running, carburetor heat can be applied if moisture is present, as ice will start to build up shortly after intake air starts flowing to the carburetor.

Then too, if outside air temperature is below 40 degrees F., carburetor heat will aid in vaporizing the fuel properly, which will in turn make for smoother engine operation.

This was demonstrated recently at the Cleveland-Hopkins airport where a student was taxiing a light trainer. The temperature was slightly above freezing and the air was dry. The plane had taxied but a short distance when the engine stopped. An instructor walked out and gave it a twist. The engine ran for a minute, then stopped again.

On the next starting, the instructor called for carburetor heat as soon as the engine began to turn up. This did the trick and the engine ran faithfully.

The instructor explained to the student that it was not carburetor ice that had caused the engine to quit but a combination of low outside temperature, the still colder temperature within the carburetor and a relatively cold engine. Under these conditions, the fuel was not vaporizing properly until the heater air was introduced to the mixture. He recommended that the student keep the heat on until they reached the take-off position. By that time, the engine and its accessories would be warm and the vaporizing of fuel would be normal.

Take-off and climb—When the engine has reached its proper operating temperature and is ready for take-off, the heat control should be placed in the "cold" position. This lets the engine develop maximum power during the critical time of take-off. It is recommended that upon reaching 400 feet, and before making the turn to the left, that the nose of the aircraft be lowered to level flight and the carburetor checked for ice. If no indication is noted, the flight can proceed as usual.

But if invisible ice is forming, the heat control should be left in the "on" position. The throttle then can be advanced to recover some of the loss in rpm and the angle of climb can be increased to lower the airspeed. This, in turn, will reduce the cooling of the engine and allow it to generate more heat. Within a few min-

utes, if the carburetor heating system is functioning properly, the warm air will clear the ice and continue to keep the carburetor and induction system free of any build-up.

On the other hand, if the pilot must continue to add throttle—between three-quarters and full open—to maintain level flight despite full carburetor heat, one of two things is definite. Either the airplane has encountered extraordinary icing conditions, or the heating system is not in order.

The solution in either case is to nurse the airplane back over the airport and be in a position to shoot a dead-stick landing if the engine fails from lack of fuel before the pilot can complete a normal landing.

Normal landing—Any time during the summer or winter, it is a good practice to apply carburetor heat 30 seconds or more before retarding the throttle while in flight. This includes the times when practicing power-off stalls, spirals, gliding down from altitude, or when retarding the power for a landing. By doing so, the pilot has insurance against the build-up of carburetor ice, and also against the probability of inefficient fuel vaporization.

Perhaps after reading about invisible ice the student or the week-end pilot might think that winter flying is too hazardous. This certainly is not the case. Once the problem of carburetor ice and its solution is understood, the pilot learns to avoid the trouble. In fact, the action will become as matter-of-fact as a correction to a compass heading to put the airplane back on course. The winter months offer many days of excellent flying weather and more pilots each year are enjoying the fun without any trouble from carburetor ice. END

Uranium Catch Off Ketchikan

(Continued from page 53)

the ocean. Even if a pilot did elect to trust his plane to the 20-foot tides, shifting winds and rocks, he would have a rugged climb up Bokan's high north slope.

Finally, it was decided that Hassa Lake, two miles to the north, would be the safest place to sit down, so on the second day after discovery—May 20, Jan and Don landed on the wilderness lake, scrambled to the "hot spot" through brush and muskeg and staked out "Uranium 55's" first claim. That same afternoon they flew out with 15 pounds of ore to be rushed off to the Atomic Energy Commission.

Back came the report that the ore was high grade—tested better than three-tenths per cent of U 308, the average of the uranium ore being taken from the Colorado Plateau.

The youthful corporation seemed to be headed toward fabulous riches. Expert guesses as to the value of the strike ranged from a million upward. From then on the three partners had to cover their tracks. There was danger of trouble from claim jumpers. Pilot Ross began to fly out of Ketchikan headed in different directions. Sometimes he turned back when he discovered another plane following him. The Climax Molybdenum Company of Denver, Colo., sent their geologists to Ketchikan at once. Diamond drilling started in August and continued until late November when the winter storms set in. Work at the Ross-Adams-Easton claim slowed down then because of deep snow on Prince of Wales Island. The Climax Company is, however, still mining ore and shipping it to the states for milling. The hope is that a mill may be erected on the island. Such a mill, working with the high quality ore, would be able to yield a daily gross of $20,000 or more.

Since Don and Jan Ross staked their claim on the island, three other good uranium strikes have been made in Alaska and new mines are being opened. Uncle Sam's last frontier, is still a vast storehouse of raw materials. Since 1867, more than two and one-half billion dollars worth of exports have been freighted south. Five hundred million of this has been gold. Uranium promises to dwarf the gold discoveries. The surface of the Alaskan hinterland remains, for the most part, untouched.

But there is a new slogan in the Northland: "Prospectors, man your planes." END

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Flight to Eternity

(Continued from page 43)

fable had declared a limit to the space which mortals were permitted to invade, and it had been said that those creatures who were once thought to inhabit the deep beyond Genoa's horizons might well be encountered in one form or another in this other sea of space.

But here was no hesitancy, for thousands of hours of labor had aimed at this moment. Even if there had been any thought of reconsidering, it was now too late; for the machine, hurtling at a speed beyond the ability of any existent instrument to measure except by indirect computation, was now where it had been declared impossible to be, in a new dimension.

How long is an eternity? It may be a moment crowded with thought. It may be the moment next to the end. If the paradox of measuring time without end be permitted, this leap into space was of an eternity's duration.

How long, then, would he be able to control a shooting star before impatient Nature evoked her law to bring him crashing to the earth, where the frustrations of centuries had proved too many times that he belonged?

But the machine kept on defiantly, straining against a pull which had never before been shaken.

The witnesses were few and select. The event was incredible—beyond their immediate understanding—rendering them remarkably self-contained. Even so, one or two of them, of pious and thoughtful nature, might have reflected that it was not right for an instrument to be developed of such preternatural competence, with the capacity, perhaps, of immeasurable destruction.

And what might be the thoughts of the traveler whose hand guided the monstrous thing?

His were the thoughts of a scientist with a singleness of purpose, to complete the task before him, to maintain control over a machine which, newly-born, was feeling for the first time the restraining hand of a master. It was a living thing which required a control of such virtuosity that an instant's failure of concentration might bring it crashing back to the earth from which it had wrenched itself so abortively, so long ago. How long? A watch tells so little of time when one rides a shooting star.

For the pilot, there must be a limit to the duration of his concentrative powers. The effect of the forward speed as the machine hissed into space, together with the clattering, thundering roar of the engine as it consumed this fuel more explosive than powder, was to add to the endless time of his flight.

But was this not success at last? This was a drama for which Greek myths and Arab fables had been rehearsals. It is reserved for so few mortals to do the deed that only creatures of myth have done.

The forgotten planet, Earth, was stirring now. The spectators were awakening to reality. The explosions of the mighty engine had faded, and they real-

(Continued on page 78)

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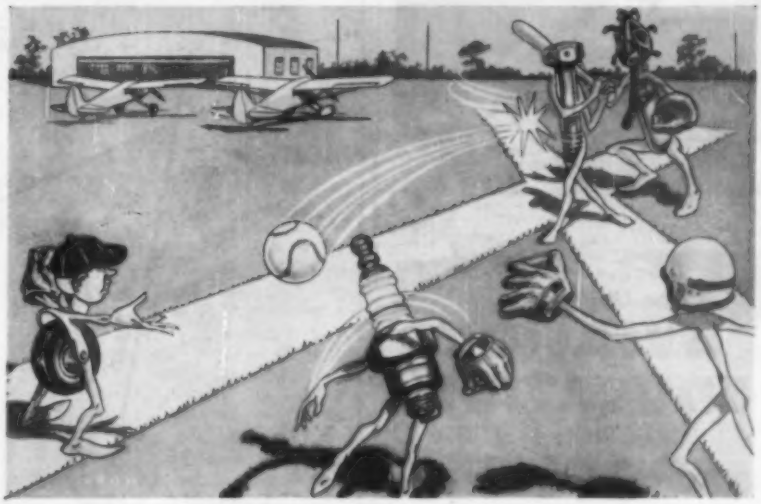

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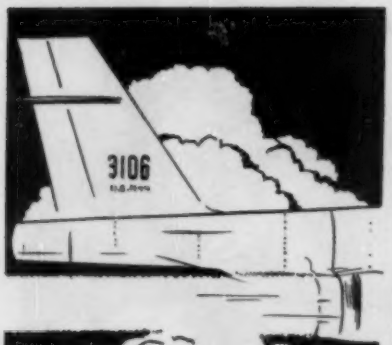

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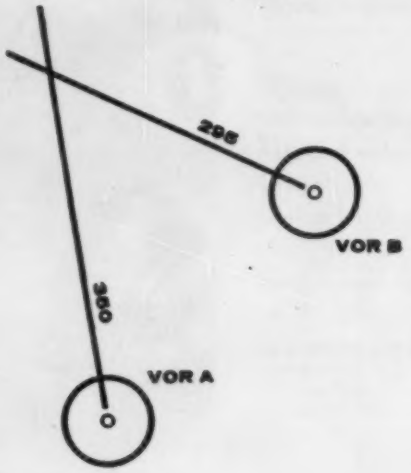
By R. C. MERRIHEW



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Referring to the figure, flying outbound on the 350° radial of station A, we want to check crossing the 295° radial of station B, which is on our right. Tune in station B, and select 295° on the course selector. The TO-FROM indicator will read FROM. Crossing the 295° radial, the course deviation needle will swing from right to left, or FROM the station, to agree with the TO-FROM indicator. If we select the reciprocal, 115 degrees on the course selector, the TO-FROM indicator will read TO. As we cross the 295-degree radial the course deviation needle will swing from left to right, or TO the station, again agreeing with the TO-FROM indicator.

Orientation consists of determining if the station is on our left or right. Our answer lies in whether or not the two indicators agree. If they do not agree, they will do so after crossing the radial.

(Continued from page 76)

ized something of the significance of this event. They saw the beginning of Space's annihilation.

It may have occurred to the more prosaic of them that no vehicle in the world could cover such a distance in comparable lapsed time, but this was truly an understatement of the fantastic fact.

And while they thought, the distance continued to grow. They were shouting a cheer for the man who dared to ride a rocket, but he could hear only the thunder of which he was himself a part.

Would he reach his goal? Already he had seen such distance sweep by him as he had anticipated in countless mathematical calculations, but now it was flesh and blood astride the laboratory formulae.

And still he flew.

A dreamer might reach the moon at this pace and in this fashion, and he was on the very route which could take him there eventually.

How great a buffeting could a man-made contrivance sustain? Would this engine, fuming with flaming gases, contain its thunder and lightning much longer?

Yet on he flew.

Two forces acted upon the machine. One was an old, familiar one, a force which, down through the ages, had always ultimately won the battle. It pulled him downward. The other was magic. It was a violation of Nature. Or was it rather a gentle seduction, a conversion of natural laws to do man's bidding?

The magic was that the line of least resistance was skyward.

And on he flew!

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Private Pilot on Radar

(Continued from page 42)

don't you come out and take a look at it on the radarscope?"

This idea was new to me. I had envied the airlines their $25,000 weather-avoidance radar because I knew that they could see CB's up to 100 miles away as though somebody had drawn a map for them. Seeing the places with no radar return, meaning no storms, they could slip through safely without the discomfort and danger of penetrating an active CB.

Out at the airport, conditions looked worse than ever. The sky to the north was obviously full of rain.

I identified myself to the weatherman, who showed me the radarscope.

"If you're going to the west of Houston, I believe there's a route open on this scope to the northwest," he explained. "You see this big blip due north? That's the thunderstorm over Texas City that you see here in Galveston, and by the haziness of the edge of the blip, I'd say it's dissipating—just moderate rain and low ceilings.

"Now look at this blip to the west—that's a bright, well-defined one which shows an active thunderstorm. Over the east part of Houston you see a decaying thunderstorm, the same as at Texas City. To the north of Houston, there's another active one.

"But note that there's plenty of room between them, and I'd say that if you headed out west along the Alvin highway and then south of Houston to Andrau, you won't have any trouble. It's VFR and will stay that way here if you have to return."

Thanking him, I filed my flight plan, allowing 45 minutes elapsed time to permit some circumnavigation. My wife and I taxied out in light rain, visibility 7 miles, 1,500 overcast. Immediately on gaining 1,000 feet, I could see the black rain clouds all over Texas City. As we flew over West Bay and the Causeway Bridge to the mainland, I could see the traffic lined up for miles at the drawbridge, trying to get home in the five o'clock rush!

Heading to Galveston omni, I took a westerly course and picked up the Alvin Highway. There it was: a beautiful 15-mile-wide hole between thunderstorms. The CB we had seen on radar was just to the west of a 1,232-foot TV tower, so we headed more northerly over Pearland Airport. There we found the third thunderstorm we had seen on radar over east and southeast Houston. Houston International was barely visible as we skirted west towards our destination. Over Sam Houston Airport, the thunderstorm was drifting north, with visibility down to about five miles. Andrau was eight miles away and looked like it would be in the rain. Heading NNW, with omni tracking me and Richmond Range giving a good •—•—, a flashing beacon caught my eye. Andrau Beacon, was on early this evening because of the weather. Contact by Unicom advised me that they had surface wind NE 25, gusts to 35.

Using a little power, and lots of crab

(Continued on page 80)

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COLLECTORS' ITEMS

By STEVE LIBBY

THERE'S A TINY island at the entrance to Great Britain's Bristol Channel which has carved a niche in aviation, even though it has no air service.

Lundy Island's claim to aviation fame has been staked with an airmail jubilee issue of postage stamps which has become a collector's item. An issue of six stamps (five of which are shown here) depicts highlights of man's conquest of the air better, perhaps, than any nation in the world.

The paradox of this situation is no more unique than the three-miles-long island itself. Once the headquarters of medieval pirates, Lundy Island is privately owned. It maintains its own currency, the *puffin*, which is also the strange sea bird indigenous to the rocky cliffs of the barren isle.

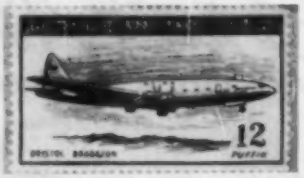
Because Lundy is not subject to British postal regulations, it must also print its own stamps. All mail entering or leaving the island must bear Lundy, as well as British stamps.

Air mail service to Lundy was started in 1929 and discontinued in 1956. An Auster Autocrat was used by Devonair, Ltd., which tried to make a go of the cross-channel service. It was in 1952 that ex-RAF pilot M. Looker and his half-dozen amateurs took charge of the mail and flew it to the island owned by gentleman farmer Albion P. Harman.

When the Autocrat proved inadequate to transport the quantity and variety of goods demanded by the 50 islanders, air service was discontinued. Harman purchased a small boat to carry mail and supplies to the lighthouse keepers, farmers and their families on Lundy.

Postmaster F. W. Gade is by far the most important citizen of the island. In addition to acting as agent for the owner, Gade is responsible for delivery and collection of the mails from Bideford.

Today, Lundy may be out of the aviation picture as far as air service is concerned, but its stamped pictures of the history of air travel still bring to the island the attention of the world.



(Continued from page 79)

onto runway 14, we were home just 35 minutes after take-off.

This trip obviously could not have been made safely without radar help. Since that time, I've noticed more carefully the radar available to pilots and have learned how to use it.

RAREPS (Radar Reports) are filed on the weather teletype. These consist of reports from all radar sites, both civilian and military. These reports locate active cells and their sizes.

Then there's the Radar Weather Advisory Service as explained in current issues of the Airman's Guide. By calling "Stargazer" on 133.2 mc or 121.5 mc, the pilot may obtain "general information concerning storm area and suggested flight path or specific vectors to avoid the storm."

These radars, besides giving the above weather information, are also available in an emergency for such other purposes as orienting lost aircraft or even an emergency GCA approach.

Finally, there are Weather Bureau radar sets. If nearby, examine one to your own satisfaction on some thunderstorm afternoon off, and see that safe route through, as I did! END

TELEPHONE ALOFT

SOON you will be able to pick up the 'phone while flying in an airliner or private plane and call your wife at home. Limited air-ground 'phone service is already available in Michigan and Illinois, authorized by the F.C.C. on a one-year trial basis. Calls can be made when within the 150-mile radius of the Michigan and Illinois Bell stations; they are handled by special aviation operators. Manufactured by A. C. Spark Plug Division of General Motors Corp. and Motorola, Inc., the system operates on 450 and 460 megacycles respectively for receiving and transmitting. Because of the frequency difference, "push-to-talk" button must be depressed to transmit. The charge for the service is $1.50 for the first three minutes, and 50 cents for each additional minute.

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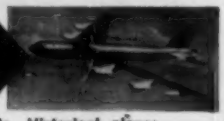

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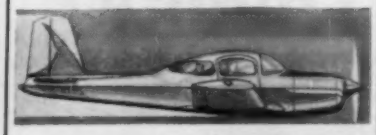

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SPEAKING OF MISSILES

Astronomical speeds of the missiles have had their effects upon the language, too. Here is a collection of abbreviations the airman will find useful in speeding his reading of developments in space vehicles.

AAM Air-to-air missile

AICBM Anti-intercontinental ballistic missile

AIRBM Anti-intermediate range ballistic missile

ANSAM Anti-missile surface-to-air missile

ASM Air-to-surface missile

AUM Air-to-underwater missile

CBM Continental ballistic missile

DICBM Defense intercontinental ballistic missile

FBM Fleet ballistic missile, US Navy

GAM Guided aircraft missile

GAR Guided aircraft rocket

GM Guided missile

ICBM Intercontinental ballistic missile

IM Interceptor missile

IRBM Intermediate range ballistic missile

MRBM Medium range ballistic missile

SAM Surface-to-air missile

SM Strategic missile

SRBM Short range ballistic missile

SSM Surface-to-surface missile

SUM Surface-to-underwater missile

TM Tactical missile

TV Test vehicle

UAM Underwater-to-air missile

USM Underwater-to-surface missile

XM Research missile

YM Prototype missile

Labors of Hercules

(Continued from page 30)

per lb. of weight—1,600 lbs. It has long been said by airmen that the engine is mother to the airplane and on this basis the T56 must be rated as a solid contribution to the cause of military logistics. In terms of specific fuel consumption it has shown definite economy.

Out of the long research involved in the factors of the Hercules—turbojet power and aerodynamic versatility—already has come a significant contribution to civil air transport—the Lockheed Electra, due to enter commercial service in the autumn of 1958. The model has been ordered by a number of U. S. airlines.

To power the Electra, Allison has developed a commercial model of the T56, the 501. Components of the two engines will be 75 per cent interchangeable. The 501 will swing Aeroproducts four-bladed props, as does the T56-A-7. The engine has had exceptional research and testing under grueling conditions—Allison has a background of some 12 million hours of gas turbine experience—and has been certificated by the Civil Aeronautics Administration. The 501's will move the Electra at speeds above 400 mph.

Riders of the airways have new and interesting experiences ahead. The result should be another break-through into a fresh succession of passenger records. And Hercules is a significant pathfinder of what is to come. END

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VHF for Lightplanes

(Continued from page 52)

crystal first on the dial. The pilot simply clicks the selector switch all the way over till it hits the stop and he is ready to make his emergency transmission.

The Power Level light is a big maintenance help. The light comes on when the "push-to-talk" button is pressed and the amount of brightness indicates the amount of power being transmitted. The bulb flickers when the pilot talks, so he knows he is getting out.

During transmission, the pilot can hear his own voice in the headset and control its volume with the volume control. The receiver tuning is done with two concentric knobs which are geared for both coarse and fine adjustments.

For easy maintenance also, the tubes are mounted upside down so that access can be had from underneath. With removal of the bottom plate, all tubes and adjustments are easily available. All parts in the set have an overload rating of at least three to one and are designed to operate in a temperature range of minus 50 to plus 70 degrees centigrade.

Although we are not yet in Omni production, we are including provisions for Omni hook-up in each of the TR-102's. The front panel Omni plug-in jack is for test purposes and the actual connection will be made from the back panel. The power supply, which we furnish with the TR-102, has the extra capacity that will be required when Omni is added.

Many private pilots are protesting the CAA rulings which make VHF a requirement. I don't agree with these pilots. I don't see why any pilot should protest a ruling which gives him the ability to be heard from 60 miles away, in case he is in trouble. What a sense of security I had, knowing that the instant I pressed the mike button, I had available the entire facilities of the CAA, Air Force and Coast Guard, if necessary! A new thrill in safety. END

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1. The names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Ziff-Davis Publishing Company, 64 E. Lake St., Chicago 1, Ill.; Editor, Gill Robb Wilson, 366 Madison Ave., N. Y. 17, N. Y.; Managing editor, C. L. Hamilton, 366 Madison Ave., N. Y. 17, N. Y.; Business manager, G. E. Carney, 366 Madison Ave., N. Y. 17, N. Y.

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G. E. CARNEY, Business Manager.

Sworn to and subscribed before me this 27th day of September, 1957.
[SEAL] Victor C. Stabile, Notary Public.
(My commission expires March 10, 1959.)

Weather by Subscription

(Continued from page 47)

cludes weather briefings at regularly scheduled hours of the day or advance forecasts for two- or three-day periods. Specially prepared surface weather maps are also available to the subscriber.

Founded by Harry Van Liew, for 25 years a United Airlines pilot, NWF is staffed by Chief Forecaster Norman F. Lacey, a wartime weather officer, and John A. Woolley, graduate meteorologist of New York University School of Engineering. Van Liew is a pilot-meteorologist. In addition, a cadre of regular airline pilots are employed as pilot-meteorologists. Their telephoned reports of actual en route weather on their criss-crossing air routes provide NWF with data used to give accurate and timely forecasting. And, of course, U.S. Weather Bureau reports are also integrated.

In justifying its existence as the only private weather forecasting service in the high density metropolitan New York area (there are industrial forecasting services in the mid-west and New England areas), Van Liew explains that "We brought this new kind of weather advisory service to aviation in a more particularized way since we, as pilots, were aware 25 years ago that information from the U.S. Weather Bureau was just not adequate for commercial lines. The Bureau did not have personnel to observe weather and forecast to individuals 24 hours every day. So, the airlines created their own forecasting flight plan departments.

"That was fine," he continues, "but there is still a serious communication lag, in our view, for the fast-expanding corporate and private flying fields. Safe and dependable weather forecast flight planning has to be obtained by pilots in a specialized way around the clock. Hence, National Weather Forecasting."

The advantages of subscribing to a private weather service at costs beginning at $25 a month, Van Liew says, are that such service will increase the safety factor for the user in flight; eliminates the costly and frustrating time and communications lag for the pilot trying to get prompt, reliable weather information, and the actual weather flight plan is given to the pilot based on comprehensive knowledge of the capabilities of both the user and his aircraft.

Weather by subscription, anyone? END

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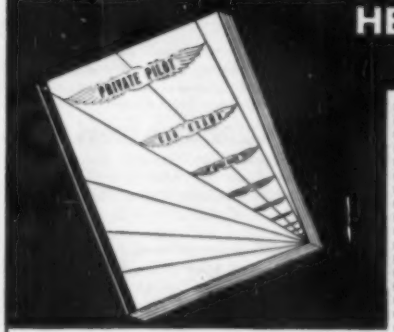

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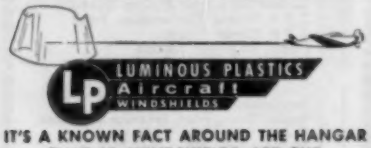

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FLYING CALENDAR

Dec. 28—East vs. West All-star Football Game. Fly in to San Francisco for Annual Shrine Gridiron Spectacle, Kezar Stadium, San Francisco, Calif.

Jan. 1, 1958 — Annual Tournament of Roses, Pasadena, Calif. Fly in to Rose Tournament parade and Rose Bowl Football Game.

Jan. 20-Feb. 7—Aviation Institute for Commercial Carriers and Business Pilots at Univ. of Southern California, University College, University Park, Los Angeles 7, Calif.

Jan. 22-26—International Air Show and Exposition at Master Field, Miami, Fla., sponsored by the Sertoma Club.

Jan. 29-31 — Fourth Annual Meeting, American Astronautical Society, New York, N. Y.

Feb. 3, 4—Flight Control—Panel Integration Symposium at the Biltmore Hotel, Dayton, Ohio, sponsored by USAF with the assistance of the Cook Research Laboratories, Morton Grove, Ill. For additional information and reservations, write to Mr. John H. Kearns, Box 942, Dayton, Ohio. There are no charges for the symposium sessions.

Feb. 16-18—Seventh Annual Ag. Conference, Texas A. & M., College Station, Tex.

March 13-21 — Fourth Annual Miami-Cuba Air Cruise sponsored by Florida Aero Club which will also include a flight to Haiti and Jamaica. Write Harry B. Collins, Air Cruise Director, 375 N.E. 154th St., North Miami, Fla.

March 17-21—1958 Nuclear Congress, managed by American Institute of Chemical Engineers, 25 West 45th St., New York 36, N. Y.

March 17-21—Aviation Division Conference, American Society of Mechanical Engineers, Statler-Hilton Hotel, Dallas, Tex.

March 30, 31, April 1—Reunion of all former members of Royal Flying Corps and Royal Naval Air Service who saw service in World War I at Toronto, Canada. Cocktail party, dinner and tours of Toronto's aircraft aviation industry plants. Contact: A. F. MacDonald, the deHavilland Aircraft of Canada, Ltd., Postal Station "L", Toronto, Canada.

April 1 — (Approximate date) Annual Spring Clinical Session of Flying Physicians at Phoenix, Ariz. Dr. L. D. Beck, 1626 North Central Ave., Phoenix, Ariz.

Calendar items must be received at FLYING's editorial offices, 366 Madison Ave., New York 77, N. Y., three months prior to the event.

A CORRECTION, PLEASE!

The address for PAC-A-CHART, featured in "FLYING Finds for Christmas" (Dec. FLYING), should read 81 E. State St., Columbus, Ohio—not Boston, Mass.

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I Learned About Flying From That!

(Continued from page 54)

see them. We follow instructions, and the tower tells us when he turns the lights up and down. We don't see them at first but in several minutes do see the lights of a larger city in the distance. Can that be Tallahassee? We tell the tower. He says he'll try the lights for us again. This time we see them. In a few more minutes, sweating out every drop of gas, we're on Tallahassee Airport.

We make a bee-line for the range station operator, mighty grateful for all his help and encouragement. We tell him so, and phone the tower. They were real friends in need, and we feel mighty good to have such great guys in the Civil Aeronautics Administration. We grab a taxi in to the Duval Hotel and quietly collapse into bed, too tired and unnerved even to have dinner.

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The hour and a half at 13,500 feet had caused enough oxygen starvation and attendant fatigue to impair judgement. Why pass up a well lighted airport (Marianna), even if it was an Air Force base. On top of this, we forgot all about our second LF radio! And to cap the climax, why didn't we try to contact Marianna Radio, since it was inevitably much nearer? The anoxia effect had not blacked me out or shown any visible effect by which I could be warned. But insidiously it had robbed me of the advantage of all my flying experience, of my routine knowledge and of every ounce of judgement. It had reduced me to a panicky novice. When I checked my gas, I found I still had five gallons in the tank. An enemy like that can clip you—but not me any more. It's oxygen for me when I get shoved topside. END

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were involved in the hold-up, a corporate-owned Cessna and a stolen Aeronca. When the suspects were apprehended they were wearing AF fatigue clothes, though civilians.

PHILCO'S RADIO DIVISION has introduced a new short-wave portable radio with

the businessman-pilot in mind. It is a seven-band, transistorized radio operating on ordinary flashlight batteries. Called the T-9 "Trans-World," the set has a built-in Magnecor and telescope antenna, moisture-proof wiring. A headjack is also provided. Not limited to use in flying, the set, weighing less than 20 pounds, can be taken anywhere for added enjoyment. Its price is about $225.

HERTZ RENT-A-CAR SYSTEM, reports car rental service at airports has been increased from 274 facilities to 361 in the past year and that 65 per cent of all its rentals to out-of-town arrivals are air travelers. Hertz further reports that its Rent-a-Plane Service is expected to be established in 25 cities this month (January).

UNLESS CAREFUL, the lady here with the ordinary household vacuum cleaner is likely to be gobbled up by the giant vacuum cleaner bringing up the rear. Behind her is the new Fruehauf Cole-Vac

airfield cleaner which, operating at 25 mph, will clean a million square feet an hour of the debris that could seriously damage jet plant engines. This particular giant is presently in use at Boeing's transport division field in Renton, Wash.

A PARTIAL LISTING by States, of colleges and universities offering Air Transportation and Management Courses has been compiled by the U. S. Office of Education. Single, free copies of this eight-page list, which includes 46 schools in 26 states, may be obtained through Willis C. Brown, Specialist for Aviation Education, Dept. of Health, Education and Welfare, Washington 25, D. C.

NEW FEATURES of the Callair (Afton, Wyo.) agricultural plane recently announced by the manufacturer include an increased wing area of 10½ sq. ft., a new fiberglass spill plate, all-steel fuselage structure with activated coating. This coating is said to be seven times harder than baked enamel and is resistant to all chemicals used in dusting and spraying. Additional features are a crack-resistant fiberglass nose cowling and a new instant-change combination dispersal unit.

FROM JANUARY 20 through February 7, the Aviation Safety Division of the University of Southern Calif., Los Angeles, is holding an Aviation Institute for commercial and business pilots. A non-credit, professional course for persons interested in commercial aviation, the course is designed particularly to serve operations managers, senior pilots, flight engineers, flight and ground instructors, test pilots and executives.

AN ECONOMICAL reflector marker which lights up from all directions has been

introduced by the Dynamic Specialties, Inc., of Birmingham, Mich. Called the Spark-L-Ite, it consists of a hollow three-inch "beehive" molded from transparent Plexiglas acrylic plastic with thousands of tiny facets in the inner surface. The unit is screwed onto the end of a ¼ x 18-inch steel rod. Designed for unlighted aircraft runways, hangar entrances and many other purposes, each costs $1.95. In lots of 200-plus, unit cost is about half.

VOCALINE, the new lightweight radio transceiver priced at less than $100 is being marketed through Air Associates. No operator's license is required. Operating on a fixed frequency no tuning is required. Available for dual operation on either 6 V.DC and 115 V.AC or 12 V.DC and 115 V.AC, the Vocaline transceiver connects even to an airplane cigar lighter for power.

NEW EDITION of CAA's once-a-year publication, "Flight Information Manual," is available and is full of helpful information for the pilot. There is a wealth of new information, including good operating practices, revision of air traffic rules, descriptive rewrite of Federal airways lighting aids, sketches of various approach lighting at airports, Search and Rescue plan, radar weather advisory service and other pertinent items. Fifty cents at Government Printing Office.

PRODUCTION EXPANSION and the increasing variety of Lycoming engine models has prompted the company to establish an aircraft engine service center and training school at the Williamsport (Pa.) Airport. The mechanics school (right)

provides free week-long training on any Lycoming model. Along with the classroom instruction, those attending can observe actual maintenance procedures at the adjacent service hangar, and engine manufacturing at the nearby Lycoming plant.

PHOTOGRAPHED IN COLOR and made in cooperation with IATA and ICAO, the latest addition to Shell Oil Company's film library is "Song of the Clouds" a 36-minute, 16mm film which shows how one airplane ticket can take a passenger around the world on a score of different airlines of his own choosing. An outstanding story of air travel, photographed on a 75,000-mile journey, this film is available to groups on loan from Shell at 50 West 50th St., New York, N. Y.

WHEN EXECUTIVES of Paradox Minerals Inc., Santa Fe, New Mexico meet in business sessions a lot of pilot talk comes into the conversation along with gas, oil and minerals. This is natural since all are pilots and each flies one of the company planes on business. Preparing here for

take-off are: (l to r) landsman Bruce Grimes (a non-pilot who says "it still takes footwork to find minerals") and pilots: geologist, Richard Spurrier; company secretary-treas., C. W. Dunbar; v. p., Charles Loveless and president, Frank Barnes.

AN ORTHODONTIC CENTER with a 2,000-foot runway for the convenience of flying patients is nearing the building stage near Michigan City, Ind. In addition to the runway, the center will include professional offices, laboratories and a building for the manufacture of teeth-straightening devices. Drs. Harold D. Kesling and Robert A. Rocke, orthodontic associates, are building the center, which is conveniently located on a 30-acre tract of land adjacent to U.S. Highway 421 at Michigan City — Westville interchange.

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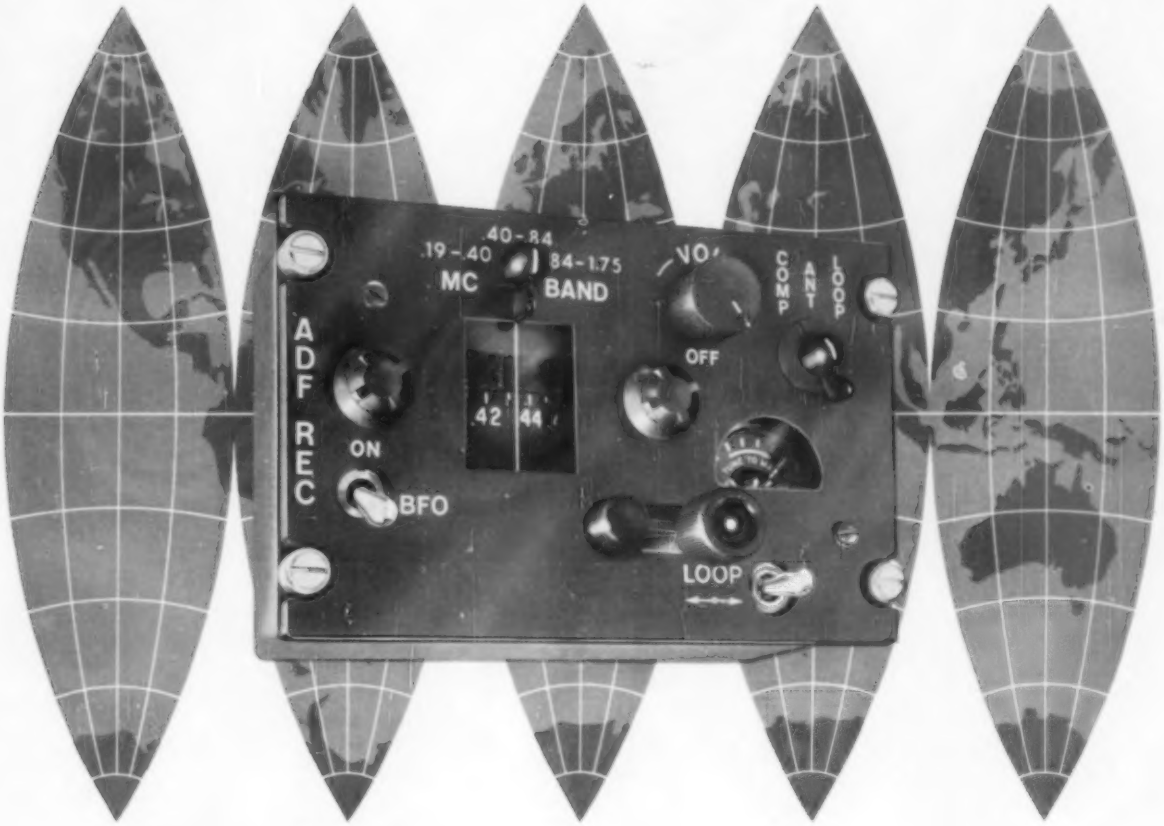

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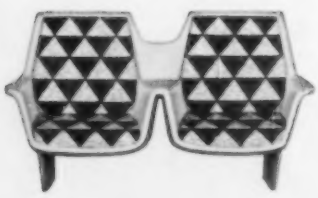

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